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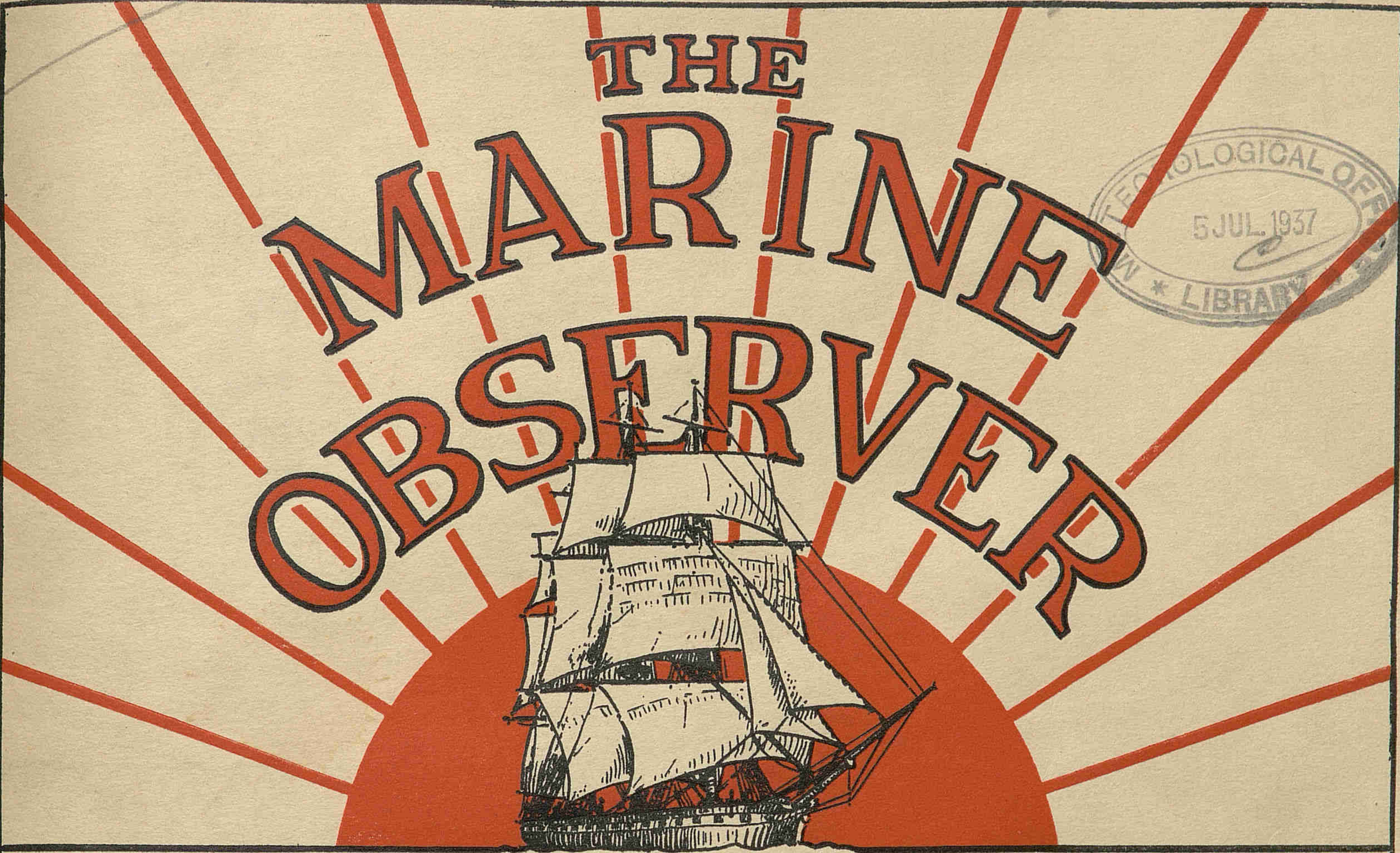
# THE MARINE OBSERVER



Ship "Hotspur."
Capt. H. Toynbee

Admiral R. Fitzroy C.B. R.N.
1854 – 1865

Lieut. C. W. Baillie R.N.
1888 – 1899

Captain H. Toynbee
1867 – 1888

Captain M. Campbell Hepworth C.B. R.D. R.N.R.
1899 – 1919

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No. 127

JULY
1937

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MO dup 85

CAPTAIN L. A. BROOKE SMITH, R.D., R.N.R., MARINE SUPERINTENDENT.

·C·H·W·

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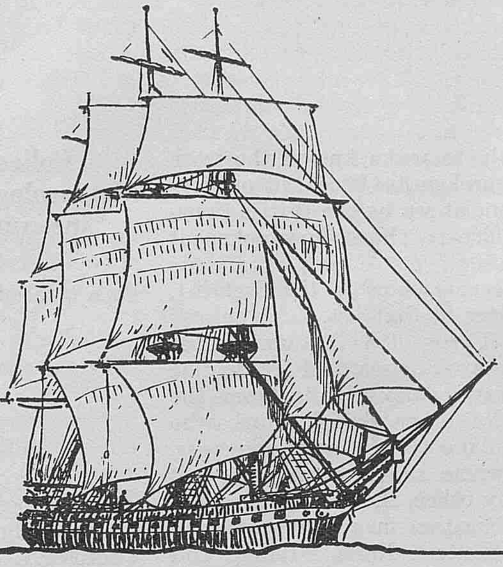

Vol. XIV, No. 127.

# THE MARINE OBSERVER

JULY 1937.

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# WORK OF THE YEAR.

## 1st April, 1936 to 31st March, 1937.

The purpose of this report is not only to make known the work done by the Marine Division of the Meteorological Office, but particularly to acknowledge the greater work done at sea by the British Corps of Voluntary Marine Observers, and the officers of ships who supplement that work.

As written returns are made by observing ships in the fleet list, they are acknowledged quarter by quarter in that list.

We wish now to thank the British Corps of Voluntary Marine Observers for their regular and continuous work at sea, and for the fine example which they set; and we also particularly wish to thank the Captains, officers, and W.T. operators of other British ships, who without enjoying the privileges of the regular corps of marine observers, supplement the work of Selected Ships where and when necessary.

During the past year, more than in any other, the soundness of the principle adopted in 1921, with the publication in a little pamphlet entitled "Weather Forecasting in the Eastern North Atlantic and Home Waters for Seamen," of encouraging the development of the natural skill of seamen has been amply justified.

In the period immediately after the Great War, when the development of wireless communication had extended the field of early information for the meteorological services, it did not at first appear to be fully appreciated that the seaman could also make good use of such widespread weather information by forecasting himself.

In the British service, with the Marine Division which is in fact the link between the Meteorological Office and the Merchant Navy, it was seen that by developing weather forecasting on modern lines at sea by seamen themselves, not only would navigation be the better aided, but also the highly specialized service of professional meteorologists ashore would benefit, by improved information from ships at sea.

The one is complementary to the other.

Similarly in the work of routine observation and collection of data, for climate, ocean current survey, ice, magnetism, and other natural phenomena, by the encouragement of the practice of good ocean pilotage in the merchant navy steam and motor navigation gains more, being made safer, and the sciences of meteorology and oceanography are better served than if collection were made for them only—a voluntary work which helps those who help themselves!

This, broadly, is the conception upon which Article 35 of the International Convention for Safety of Life at Sea was based, and during the past year, the Marine Division has done something towards making good the pre-war arrears of utilizing the data collected since 1855.

Collection of observation by written return is now regulated as far as possible to the needs of the time, and what can be foreseen for the future.

The volume of observations for the statistical purposes of climate is limited by the number of observing ships keeping the meteorological log.

The remainder of the observing fleet make written returns of synchronized observations. These written returns are necessary to ensure that routine wireless weather telegraphy at sea is based upon reliable observation, and to provide information for investigation and scientific study of weather in all parts of the world.

The Wireless Weather Register, in which the reports of Selected Ships are coded, is to ensure that coding is properly carried out, and that communication is properly regulated.

Thus the work of the regular observing fleet fulfils many purposes, and sets an example which is a valuable lead to the whole merchant navy. It is the nucleus whose work is being extended as occasion may arise by British Supplementary Weather Reporting Ships.

### Collection of data by written returns during Year. Meteorological Log (4 hourly) kept with complete official instrumental equipment, kept by an average number of 30 observing ships.

Of a total of 88 received :—

36 classed Excellent.
52 classed Very Good.
0 classed Good.
0 not classed.
—
88 Total.
—

These logs have only been kept in observing ships passing through regions of the North Atlantic, Pacific, and Antarctic and in Home Waters where data are still required to complete the survey of the oceans for climate.

### Ships Weather Record Form 911, kept by an average number of 328 observing ships.

Of a total of 2,544 of these forms received, they were classed as follows :—

799 Excellent.
1,745 Very Good.
0 Good.
0 not classed.
——
2,544 Total.
——

With the increasing amount of clerical work which the officers of the merchant navy are called upon to do in the conduct of the business of their ships, it is most creditable to all concerned that the general high standard of meteorological logs and ship's weather records has been maintained.

### Cadets Meteorological Logs, Lighthouse Registers, Coast Guard and Light Vessel Returns, Ice Report, Sea Water Samples and Miscellaneous Contributions.

The valuable work of training future marine observers by the officer's training ships *Conway* and *Worcester* and the Nautical College, Pangbourne has continued, all Cadet Meteorological Logs returned being "Excellent."

The lighthouse stations at Watling Island, West Indies and at Cape Pembroke, Falkland Islands, have continued to return routine observations.

The return of ice reports on Form 912 has been continued by British ships sighting ice.

Information recorded in the Remarks Books of His Majesty's ships, including the set and drift of current experienced, has been received from the Hydrographer of the Navy.

The work of collecting water samples and observations of sea surface temperatures in the North Atlantic has been continued in six ships for the Fisheries Laboratory at Lowestoft.

### The use made of the data.

The charting of the currents of the South Pacific has been continued in The Marine Observer.

With the information compiled during the construction of the Atlas of Currents of the Indian Ocean, and with that Atlas, the information of currents in Admiralty Pilots has been revised.

The Admiralty Ice Charts have been revised.

A selection of the remarks has been published in this Journal, and most of the information in it is compiled from data received from the corps of voluntary marine observers.

The Sixth Edition of the MARINE OBSERVER'S HANDBOOK published in January, 1937, is based upon experience obtained from the collection of data.

All synchronized weather observations made in the North Atlantic since June, 1935, are being used at the Branch Meteorological Office at the Air Port of London, Croydon, for making weather charts, from which to obtain information for airmen who will be engaged in flying the North Atlantic.

## Work done in the Marine Division towards the use of data collected.

DURING the year the temporary addition of staff projected in this Report in the July 1935 MARINE OBSERVER was made, and a number of female Clerical Assistants have been trained in the work of data extraction on the Hollerith system.

Last year no less than 137,320 sets of observations were punched on cards. This year, more than twice that number have been punched on cards, viz. 280,696.

On 2nd January, 1933, when we started with the then available staff to overcome arrears, there were about one million three hundred and forty thousand sets of observations made in the Pacific and North Atlantic between the years 1855 and 1930 remaining in the logs as they were received.

There now remain about seven hundred and thirty-seven thousand sets of observations to be extracted before the construction of atlases of the North and South Pacific and North Atlantic can be commenced.

Table I at the end of this report indicates the number of sets of observations extracted from logs during the past 16 years.

MARSDEN CHART I gives the number and distribution of observations collected and extracted since the 1st April, 1920, that is post-Great War work only.

MARSDEN CHART No. II shows the distribution of observations collected before 1920 (mainly pre-war) which have been punched on cards in the Marine Division since 2nd January, 1933.

## The supply of unpublished observations to the Meteorological Services of the British Empire and Foreign Countries.

BY means of the registers of British Selected ships, written records of observations in code have been supplied for the purpose of weather investigation, as follows :—

| | |
|---|---|
| To South Africa (and to neighbouring meteorological services) for the year 1935–36, in the region South of the Equator, and mainly between the meridians of 30° W. and 80° E. ... ... ... ... ... | 10,699 |
| To Australia (and the neighbouring meteorological services) for the year 1935–36, in the region South of the Equator, and mainly between the meridians of 80° E. and 70° W. | 10,410 |

The remainder of the registers for the year are awaiting acceptance by the meteorological services adjacent to the regions for which they contain observations.

By means of these registers, the observations of British ships are made available to meteorological services of other countries, so that British ships need not be called upon to make written returns to other services, thus obviating multiplication of work at sea.

## The Selected Ship Service.

MARITIME countries party to the International Convention for Safety of Life at Sea are under an obligation to " arrange for certain Selected Ships to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy for the benefit of other ships and the various official meteorological services; and to provide coast stations for the reception of the messages transmitted."

To carry out this service so that overlapping shall be reduced, and each maritime country may bear a proportionate part of the responsibility according to its tonnage, it is intended that each maritime country should maintain in voluntary service a number of ships on the register of their own country, in accordance with their proportion of the world's tonnage of steam and motor vessels of over 100 tons.

The present number of Selected Ships of all nations should be 1,000.

Great Britain's proportion of the world's tonnage of steam and motor vessels of over 100 tons fell from 28·5 per cent. to 28·1 per cent. during the year 1935–1936.

Accordingly since 30th September, 1936, the number of British Selected Ships, formally appointed as such, has been 281.

British Selected Ships have carried out most regularly the routine of making weather reports to all ships, or to stations detailed in THE MARINE OBSERVER, in all parts of the world.

At present British Selected Ships are serving no less than 14 different meteorological services, direct, in different parts of the world, and through them many other services, since their reports are re-transmitted in synoptic messages.

No less than 52 stations have been appointed up to date in different parts of the world, to work with British Selected Ships at schedule times, some of these stations performing the double duty of receiving reports from both " A " and " B " Selected Ships.

This list of W.T. stations detailed to receive weather reports from British Selected Ships is copied in Volume II of the Admiralty List of W.T. Signals for general information and the use of Supplementary Weather Reporting Ships.

The system of communicating on medium waves (2100 or 2400 metres) according to station, by " A " Selected Ships has been maintained this being considered at present more reliable than are short waves, for this particular purpose, since there is no " skip."

The range of " B " Selected Ships has increased of recent years, and during the past year ranges of up to 950 miles have been reached by " B " Selected Ships at routine times in daylight hours.

TABLE II at the end of this report has been worked out on the information recorded in the registers of Selected Ships, for one month only, viz. October, 1936, and for the regions indicated, only.

It gives a fair and general idea of the regularity with which British Selected Ships carry out this voluntary service in a highly efficient manner along all the trade routes of the world.

By this Table, it will be seen that there are days in some regions when no British Selected Ships are present, and doubtless there are regions where there are days when there are no Selected Ships of any nation.

Since 1st October, 1936, the service of Merchant Navy Agents has been extended to visit British ships which are not Selected Ships; and as far as possible, this service is carried out by the Port Meteorological Officers, who do the greater part of the work in attending upon regular observing ships, since they are stationed at the ports of the greatest tonnage.

By this means already no less than 143 masters of British ships outside the regular observing fleet have undertaken to carry on the service of routine wireless weather reporting where and when there are not Selected Ships, their officers being instructed in the procedure, and given the necessary information by the Merchant Navy Agents.

Constant attention is paid to maintaining the best possible geographical distribution of Selected Ships and Supplementary Weather Reporting Ships.

Regular observing ships which are not formally detailed as Selected Ships also make routine wireless weather reports where and when necessary.

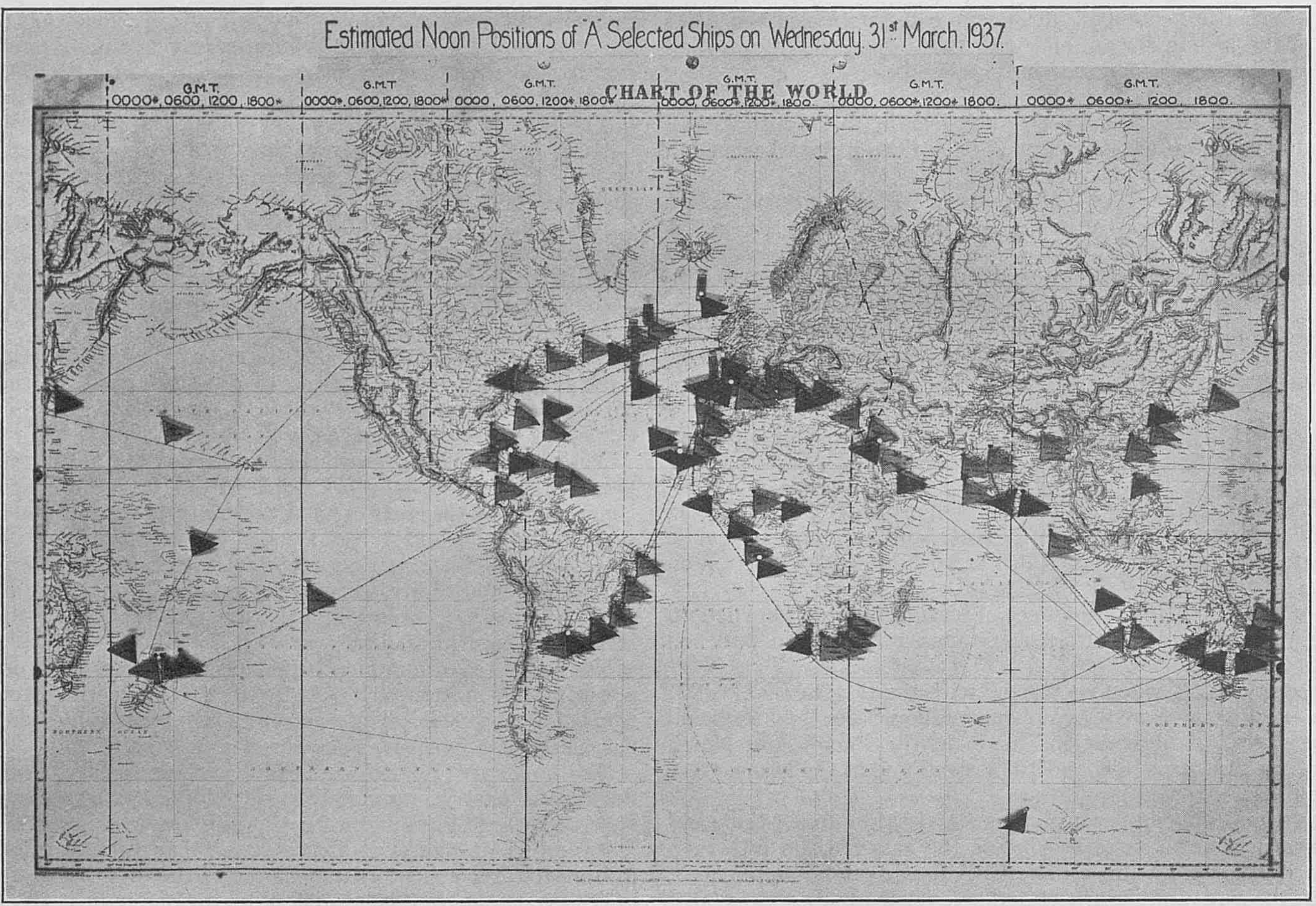
CHART III shows the distribution of Selected Ships on Monday, 1st June, 1936, which is fairly typical. The high percentage of 45 per cent. at sea and in position to report reflects credit upon the Port Meteorological Officers, Merchant Navy Agents, and those in the Marine Division responsible for attending to reliefs and replacements in the regular observing fleet.

It is also a welcome indication of the greater liveliness in British maritime trade over that of recent years. In 1930 this percentage was down to 33.

The photograph on p. 82 of the daily position chart worked in the Marine Division gives the estimated position on Wednesday, 31st March, 1937, of British " A " Selected Ships at sea and in ports abroad.

This chart is worked daily for the purpose of making the roll call through Portishead, and keeping watch upon the service of " A " Selected Ships in all parts of the world.

In the Eastern North Atlantic there is congestion of wireless traffic, probably greater than in any other part of the world.


Estimated Noon Positions of "A" Selected Ships on Wednesday 31st March 1937.
CHART OF THE WORLD
G.M.T. 0000*, 0600, 1200, 1800*
G.M.T. 0000*, 0600, 1200, 1800*
G.M.T. 0000, 0600, 1200*, 1800*
G.M.T. 0000, 0600*, 1200*, 1800
G.M.T. 0000, 0600*, 1200*, 1800
G.M.T. 0000*, 0600*, 1200, 1800

In the North Atlantic there is more shipping, the heaviest seas are encountered, and weather and visibility are variable, so that particular attention is desirable to aid navigation there.

The forecasting services of Great Britain and Northern Europe are dependent upon information from ships at sea to the westward, and there is the projected Trans-Atlantic aerial mail service to be considered.

Hence during the past year particular care has been taken to recruit the service of every British liner traversing the North Atlantic, which is fitted for transmission on 2100 metres.

More " B " Selected Ships have been detailed amongst ships regularly employed on the Trans-North Atlantic routes, and this service is supplemented by a large proportion of Supplementary Weather Reporting Ships.

Since 1st July, 1936, the W.T. stations at Valentia and Malin Head have been detailed to receive reports addressed to Weather London. The W.T. Officers-in-charge of these stations have worked a roll call, in conjunction with their traffic signals, in which are named " B " Selected Ships, regular observing ships, and Supplementary Weather Reporting ships, which are within range of the stations and which provide a good spread of weather reports, to as far west as, up to the present, Longitude 33°36′W.

Thus from Longitude 40°W. to the North Sea and from Latitude 37°N. northwards, routine reports are received from British ships at Weather London, " A " Selected Ships providing the majority, at great range and at all four observation times.

Table III gives the number of observations received by Weather London reported by wireless telegraphy through Portishead Radio from British " A " Selected Ships in the Eastern North Atlantic and North Sea, for each month throughout the year.

Since 1st March, 1937, reports from ships in the Eastern North Atlantic south of Latitude 37°N., many of which were formerly received at Weather London have been addressed to the Meteorological Office, Gibraltar, through Gibraltar Royal Naval W.T. station.

This station now also receives weather reports from Selected Ships in the Mediterranean, R.M.S. *Ormonde*, Captain G. G. Thorne, being the first ship to report to this station from a distant position in the Mediterranean.

Table IV indicates the number of observations received at Weather London from British ships through Malin Head and Valentia W.T. stations.

The communication has been most regular and satisfactory, and an improvement upon last year.

We wish particularly to express our appreciation of the courtesy and advice given by Lieut.-Col. C. G. Crawley, Royal Marines, Chief Inspector of Wireless Telegraphy, General Post Office, and Mr. S. Stansbridge, Traffic Controller of the Marconi International Marine Communication Company, in matters appertaining to the conduct of Selected Ship W.T. communication in all parts of the world; and to the Officers-in-Charge at Portishead, Valentia and Malin Head W.T. stations in particular for the part they have taken in this work in the Eastern North Atlantic.

## Weather Reports from Ships in Home Waters.

Table V indicates the number of weather reports received from British Cross Channel Steam Packets during each month of the past year.

## Weather Forecasting at Sea.
## Practical Application of the work to Navigation.

From our personal contact with the merchant navy it has been evident for some time that the skill of many officers has been improving in forecasting weather at sea.

This year we have received proof from a larger number than ever before, and there is no doubt that the navigation of many ships in the merchant navy is being aided in this way.

In the Marine Observers' Log in this number of The Marine Observer, we publish examples, which indicate how well some officers do this work.

Generally ocean pilotage, that art of determining the best course and speed of a ship clear of the land in making her port with the smallest expenditure of propelling energy in a given time, or in the shortest time, has received more attention of recent years.

Problems of ventilation of holds, particularly as it affects the preservation of cargoes, have been studied, and to good effect in many ships on long voyages to the distant Southern Dominions.

Towards the end of the sailing ship era, when steam was quickly replacing sail, there was a tendency to disregard the value of the study of climate, weather, and ocean currents.

After the clipper ship was at her zenith, in the late eighties and early nineties, when many of the present senior officers of the merchant navy were serving their apprenticeship in steel sailing ships, there were masters of ships who had a great knowledge of marine meteorology, acquired by observation and experience in the hard school of necessity. Without the aid of weather reports communicated by distant ships by wireless telegraphy, they, being isolated observers, were able often to forecast changes, and their knowledge of winds and currents was unsurpassed.

With wireless communication and the world-wide economic conditions causing such depression of trade after the Great War, there has been a revival of this practice of marine meteorology, which is now commencing to repay all those who have brought it about.

The merchant navy has always prided itself upon its self reliance, and this service of marine meteorology has been developed to foster that great quality.

The officers of the merchant navy have to have a working knowledge of a great many subjects, and so it is desirable that for the merchant navy marine meteorology should be kept within practicable limits.

In these days when so much importance is attached to academic qualifications and academic work, it is well to bring out these facts of progress made by seamen.

The work has gained from academic efforts and associations, but it has been done at sea entirely by seamen, than whom there are no more practical people; and in the conduct of the work, both in the central Marine Division and at the ports, the assistance given by the nautical officers has been one of the greatest assets.

## Port Meteorological Officers and Merchant Navy Agents.

To obtain and maintain a good spread of regular observation in British ships in all oceans, and over all the trade routes, and the less frequented parts of the oceans, it is necessary that the attendance of the Marine Division should reach the merchant navy through a number of widespread ports.

If the work were confined to a few of the principal ports only, ships sailing from other ports to regions where it may be particularly desirable to increase observational activity could not receive the desired attention.

During the years of depression of shipping, no great amount of work was involved in the merchant navy agencies on the East Coast; and we were fortunate in being able to retain the services of the Agents for the Humber, Tyne, and Forth districts who were all master mariners holding appointments which give them little time to devote to this work, but who kept alive this connection of the Meteorological Office with the shipping out of East Coast ports.

With the revival of shipping trade and the demand for more voluntary work by ships sailing out of East Coast ports to give a wider spread of observation over the seven seas, Captain A. M. Brown at Hull, Captain J. J. McEwan at South Shields, and Captain C. G. Bonner at Leith found that they were unable to devote the necessary time to meet these demands, and accordingly resigned.

We thank them most heartily for the valuable service which they have rendered in keeping alive the Agencies on the East Coast of England and Scotland.

On 25th November, 1936, their reliefs were appointed—Mr. W. H. Carr for the Humber, Captain F. B. West for the Tyne, and Captain G. More for the Forth. They have already materially assisted in improving the spread of routine voluntary observational work of the British Merchant Navy.

During the past year, the Agents upon the Clyde and in the Bristol Channel have secured a larger proportion of observing ships, and the Agents at Southampton, Sydney N.S.W. and Hong Kong have maintained the same proportion of observing ships; and all Agents in Great Britain have taken an active part in advising the masters of British ships as to the supplementary service to the Selected Ship system which is desired.

This has to some extent eased the pressure upon the Port Meteorological Officers at Liverpool and London, who are now able to give more attention to instruction of the corps of voluntary marine observers, and to assist me in regulating the disposition of observations at sea.

## Acknowledgment to the Corps of Voluntary Marine Observers.

The written returns made—Logs, Records, Registers and Reports—by each observing ship have been acknowledged quarter by quarter in the Fleet List with the publication of each number of The Marine Observer. These written returns mean a tremendous amount of work at sea. They provide us with the information which is necessary for research, for charting the oceans, and afford us a means of guiding the work of observation at sea. They are the outward and visible signs of the effort which is being made by British seamen to gather knowledge of the atmosphere and the sea.

We thank most heartily all those who have contributed to the work of organized voluntary observation at sea.

In recognition of specially fine work the Meteorological Committee are making awards to the Commanders and Principal Observing Officers of a large number of ships whose work has been classed excellent for not less than a certain period during the past year. Their names are given in the list which follows.

Marine Superintendent.

London.
5th April, 1937.

## LIST OF CAPTAINS AND PRINCIPAL OBSERVING OFFICERS TO WHOM THE METEOROLOGICAL COMMITTEE HAVE MADE EXCELLENT AWARDS.

| Captains. | Principal Observing Officers. | Ship. |
|---|---|---|
| Andrews, C. M. | Miller, L. B. | *Karamea* |
| Ashworth, F. | Dawson, H. S. | *Dorset* |
| Beatty, J. L. | Osborne, L. | *Mashobra* |
| Beeching, F. C., D.S.C. | Holland, S. J. | *Prague* |
| Benson, C. W. | Eckford, R. | *Orduna* |
| Biggs, J. H., Commr. R.N.R., R.D. | Leitch, I. A. | *Corfu* |
| Blencowe, J. | Turner, H. C. | *Devon* |
| Bone, D. W. | Robertson, R. L. | *Transylvania* |
| Boothby, C. R. U., Lieut. R.N.R. | Freaker, R. C. | *R.R.S. William Scoresby* |
| Bradley, J. B. | Howard, E. N. | *Port Denison* |
| Broome, W. | Needham, E. | *Clydebank* |
| Brown, A. H. | Garner, R. E. | *Port Bowen* |
| Brown, W. S. | Ewing, D. | *Montclare* |
| Browning, J. B., Commr. R.N.R., R.D. | Lapage, J. C. | *Maloja* |
| Buret, T. J. C., D.S.C. | Davies, T. | *Almanzora* |
| Burton Davies, J. | Canton, W. | *Hertford* |
| Cameron, E. P., Capt. R.N.R., R.D. | Treseder, H. R. | *Orama* |
| Cameron, H. | Holt, R. E. | *Northern Coast* |
| Carter, E. A. J. W., Capt. R.N.R., R.D. | Shrubsole, J. C. N. | *Viceroy of India* |
| Cartwright, C. W., D.S.C. | Hand, R. H. | *Comorin* |
| Clarke, P. B., D.S.C. | Jarvis, S. A.<br>Fagan, C. H. | *Tongariro* |
| Clayton, R. G., D.S.C., Capt. R.N.R., R.D. | Middleton, N. M. | *Highland Brigade* |
| Collie, A. | King, H. L. P. | *Caledonia* |
| Compton, J. E. | Hopkins, W. B. | *Port Chalmers* |
| Compton, R. W. | Faulkner, J. R. | *Baronesa* |
| Cormick, A. E. | Todd, H. V. | *Highland Princess* |
| Cotching, W. A. | Sinclair, I. M. | *Rajputana* |
| Dene, R. C. | Godfrey, A. P.<br>Rogers, L. A. | *Rawalpindi* |
| Dossor, W. A. | Hodgson, G. | *Dago* |
| Draper, M. G., Commr. R.N.R., R.D. | Cholerton, H. J. | *Kaisar-i-Hind* |
| Durham, R. S. | Gorman, F. R.<br>Walker, K. E. | *Port Fremantle* |
| Elford, H. C. | Cresswell, G. F. | *Ceramic* |
| Ellis, F., D.S.C. | Sherwell, H. N. | *El Argentino* |
| Elwell, F. R. | — | *Harmonides* |
| Field, H. G. B. | Davies, T. | *Opawa* |
| Forrester, W. T., O.B.E. | Sloper, J. D. S. | *Cavina* |
| French, F. E., Capt. R.N.R., R.D. | Strike, J. D. | *Mooltan* |
| Friend, A. B. | Raynor, E. | *Dunster Grange* |
| Frost, C. R. | Murray, D. | *Duquesa* |
| Fulcher, H. D. | Howard, A. D. | *Matheran* |
| Galer, R. P. | Carpmael, R. | *Clan Morrison* |
| Gemmell, W. | Gibson, J. L. | *Cameronia* |
| Gibbons, G., Capt. R.N.R., R.D. | Evans, J. P. V. | *Britannic* |
| Golding, H. H. | Breuilly, H. F. | *Isle of Jersey* |
| Gordon, H. R. | Collins, J. | *Wairangi* |

| Captains. | Principal Observing Officers. | Ship. |
|---|---|---|
| Grant Pyves, W. A. | Richardson, J. L. | *Mulbera* |
| Greenall, J. | Thomas, G. E. | *Makalla* |
| Hall, A. H. | Mackenzie, A. J. | *Beaverburn* |
| Hall, G. S. | Cady, L. W. | *Port Caroline* |
| Hannon, E. F., Commr. R.N.R., R.D. | Watson, D. G. D. | *Naldera* |
| Harrison, R., D.S.O., Capt. R.N.R., R.D. | Legassick, G. V. | *Strathmore* |
| Higgs, W. G. | — | *Port Gisborne* |
| Hill, L. C., O.B.E., Lieut. R.N.R. | Walker, R. | *R.R.S. Discovery II* |
| Hill, T. V. | Weston, H. J. P. | *Aorangi* |
| Holland, E. | Williamson, H. P.<br>Church, P. M. | *Rangitata* |
| Hopper, G. E. | Brown, F. W. | *Avelona Star* |
| Howard, H. C. | Mackie, J. H. A. | *Almeda Star* |
| Howell-Price, J. | Dawson, H. S. | *Dorset* |
| Irving, R. B., O.B.E., Capt. R.N.R., R.D. | Divers, E. A. | *Aquitania* |
| Kemp, E. R. | Cathie, C. B. | *Westmoreland* |
| Kinnell, G. | Clarke, J. | *Ruahine* |
| Kippins, T., D.S.C. | Moate, J. S. | *Port Hobart* |
| Laird, C. A. I. | MacMillan, P. | *Buteshire* |
| Laird, J. | Brown, A.<br>Forster, H. | *Turakina* |
| Lamb, C. B. | Carter, R. H. | *Rotorua* |
| Lawson, J. H. | Evans, C. V. | *Apapa* |
| Legg, J. M. | Halliday, A. C. | *Ranpura* |
| Lidbetter, W. | Balcombe, E. | *Brighton* |
| Ling, J. T. | Penfold, D. H. | *Ingoma* |
| Linton, P. | Hine, W. | *Manchester Port* |
| Lloyd, D. L. | Wotherspoon, J. W. | *City of Exeter* |
| MacDonald, D. | Condon, E. V.<br>Collins, J. N. | *Makura* |
| McIntosh, A. | Macfarren, E. B. D. | *Mataroa* |
| McKellar, A. W., Capt. R.N.R., R.D. | Mercer, L.<br>Warren, H. L. | *Rangitane* |
| McRostie, J. | — | *Samaria* |
| Mann, R. | Fitch, N. F. | *Worcestershire* |
| Martin, W. | Gell, A. H. S. | *Niagara* |
| Matheson, Sir C. G., D.S.O., Commodore R.N.R., R.D. | Pinckney, C. W. | *Oronsay* |
| Matthews, J. D. | Harris, R. A. | *Berwickshire* |
| Meikle, A. R., Capt. R.N.R., R.D. | Roberts, W. J. P. | *Montcalm* |
| Merchant, W. J. | Daly, J. B. W. | *City of Hereford* |
| Moulton, E. W. | Case, G. C. | *Arandora Star* |
| Murchie, P. A., O.B.E., Capt. R.N.R., R.D. | — | *Carinthia* |
| Needham, R. | Clough, W. M. | *Port Wellington* |
| Nelson, J. | Davidson, A. R. | *Ixion* |
| Neville, R. C. | Towill, G. E.<br>Ross, W. F. | *Rhexenor* |
| Oswald, S. | Burt, W. G. | *Tairoa* |
| Owen, R. | Powell, H. S. | *El Paraguayo* |
| Owens, A. L., Capt. R.N.R., R.D., A.d.C. | Sargent, P. | *Orion* |
| Parfitt, L. | Christian, J. S. G. | *Alipore* |
| Parry, G. R., Commr. R.N.R., R.D. | Main, W. S. | *Empress of Britain* |
| Peel, R. V., Commodore R.N.R., R.D. | I'Anson, A. C. | *Queen Mary* |
| Pilcher, C. R. | Brooke Smith, J. | *Somerset* |
| Plage, W. C. C. | Weir, C. C. | *Amarapoora* |
| Potts, J. W. | Ryan, R. J. | *Fresno City* |
| Quirk, W. | Owen, E. | *Eastern Coast* |
| Redford, L. M. | Graham, W. | *Clan Macdougall* |
| Rennie, W. | Blackwood, J. H. | *Athenia* |
| Reynard, J. G. | Richards, L. | *Agamemnon* |
| Rhodes, H. R. | Spurling, E. J. | *Mongolia* |
| Richardson, C. | Duck, N. W. | *Montrose* |
| Richardson, L. | Newton, V. | *St. Julien* |
| Richmond, J. W. | Thompson, H. | *Duke of Argyll* |
| Ridyard, A., O.B.E. | Eckford, R. | *Orduna* |
| Robinson, C. A. | Read, E. C. | *Port Auckland* |
| Robinson, F. W. | Hill, H. | *Remuera* |
| Roche, C. B. | Howard, L. H.<br>West, D. | *Cathay* |
| Ross, J. | Campbell, J. K. | *Reina del Pacifico* |
| Rothwell, A. | — | *Duchess of York* |
| Rowberry, W. | Bromley, J. E. | *Director* |
| Sapsworth, C. H. | Oatridge, E. J. | *Duchess of Bedford* |
| Sarson, M. J. | Roberts, R. W.<br>Edgecombe, C. | *Orford* |
| Saunders, W. J. | Wallis, S. P. | *Zealandic* |
| Scorah, A. | Millar, A. D. | *British General* |
| Shaw, A. | Lambton, D. W.<br>Jones, N. B. | *Adrastus* |
| Shillitoe, B., Commr. R.N.R., R.D. | Wright, G. H. | *Alcantara* |
| Short, C. E. | Hutchinson, C. | *Ranchi* |
| Smellie, T. F. | Dobson, A. H. | *Nascopie* |
| Smith, F. | Warren, A. | *Fordsdale* |
| Smith, H. Elliott, Lieut.-Commr. R.N.R., R.D. | Langton, J. C. | *Chitral* |
| Smith, W. D. C. | Collinson, F.<br>Gow, W. W. | *Baradine*<br>*Narkunda* |
| Stenson, F. J., Capt. R.N.R., R.D. | Bruce, M. | *Clan Macalister* |
| Stuart, C. E., Capt. R.N.R., R.D. | MacIver, P. G. | *Stirling Castle* |
| Stubbs, W. | Grist, F. W. | *Tudor Star* |
| Taylor, A. E., Commr. R.N.R., R.D. | Young, M. | *Huntingdon* |
| Thomas, E. O. | Garner, R. E. | *Port Bowen* |
| Thorne, G. G., Capt. R.N.R., R.D. | Smith, J. H. | *Ormonde* |
| Tickell, J. M. M. | Christian, J. S. G. | *Moldavia* |
| Townley, J. C., Capt R.N.R., R.D. | — | *Georgic* |
| Turner, E. B. | Manning, F. G. J. | *Cambria* |
| Turner, W. A. | Davidson, A. R. | *Ixion* |
| Upton, H. L., D.S.C., Capt. R.N.R., R.D. | Branch, W. J. V.<br>Chapman, R. H. | *Durham* |
| Vigurs, R. C. | Phillips, W. A. | *Erin* |
| West, W. | Campbell, D. W. | *Taranaki* |
| White, C. D. | Clarke, W. J.<br>Braidwood, T. | *Nardana* |
| Wilde, H. J. | Brown, A. | *Middlesex* |
| Williams, R. | Walton, A. L. | *Port Adelaide* |
| Williams, W. E. | Butler, H. | *Princesa* |
| Wilson, G. | Tallack, M. B. M. | *New Zealand Star* |
| Wilson, J. A. | Macleod, K. I. | *Yoma* |
| Womersley, H. | Fraser, T. | *Highland Monarch* |
| Woodhead, T. H. | Duckels, S.<br>Tree, C. A. | *Dearne* |
| Wyatt, F. N. | Wood-Roe, W. H. C. | *Bendigo* |
| — | Cladingbowl, R. L. | *Glaucus* |
| — | Fieldhouse, S. | *Empress of Japan* |
| — | Mayne, C. | *Strathaird* |
| — | Morton, M. J. | *Arlanza* |
| — | Sayers, L. A. | *Crispin* |
| — | Whittle, J. M. | *Maron* |

## TABLE I.—The Number of Sets of Observations Extracted from Meteorological Logs during each Year from 1921.

| | 1936–37. | 1935–36. | 1934–35. | 1933–34. | 1932–33. | 1931–32. | 1930–31. | 1929–30. | 1928–29. | 1927–28. | 1926–27. | 1925–26. | 1924–25. | 1923–24. | 1922–23. | June, 1921–22. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Current Year.* Number of complete sets of observations extracted and punched on cards with currents extracted and phenomena indexed. | 36,275 | 16,843 | 48,194 | 41,932 | 58,747 | 70,718 | 19,185 | 17,987 | 43,117 | 73,745 | 78,180 | 75,852 | 65,000 | 74,749 | 97,533 | 63,731 |

## TABLE 1. The Number of Sets of Observations Extracted from Meterological Logs during each Year from 1921.

### (*Continued.*)

| | 1936–37. | 1935–36. | 1934–35. | 1933–34. | 1932–33. | 1931–32. | 1930–31. | 1929–30. | 1928–29. | 1927–28. | 1926–27. | 1925–26. | 1924–25. | 1923–24. | 1922–23. | June, 1921–22. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Arrears.*<br>Number of complete sets of observations received since 1920, extracted and punched on cards during the years 1932–37. | — | 32,067 | — | 9,546 | — | 2,047 | 28,497 | 11,625 | — | — | 5,064 | 3,656 | — | — | — | — |
| Number of part sets of observations in the Pacific and N. Atlantic received previous to 1920, extracted and punched on to cards and phenomena indexed since January 1st, 1933. | 201,702 | 120,477 | 126,217 | 82,602 | 17,798 | — | — | — | — | — | — | — | — | — | — | — |
| *Ocean Currents.*<br>Number of additional observations of current from the year 1910 extracted. | 6,456 | 2,817 | 4,821 | 4,850 | 6,118 | 8,609 | 7,980 | 10,913 | 2,626 | 3,496 | 8,242 | 8,210 | 5,746 | 4,259 | 1,826 | — |

## TABLE II.—Particulars of Communication by British Selected Ships in Different Parts of the World during October, 1936.

| Region and W/T Station detailed to receive or intercept Selected Ships' reports. | 31 days period. | No. of selected ships in region. | No. of reports desirable by schedule. | No. of reports made according to schedule | | Percentage of possible number of reports to be made, desired by schedule. | No. of additional reports of observations recorded at International times, reported at other than schedule times. | No. of reports received at station. | No. of ships receiving reports. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | To Station. | To C.Q. | | | | |
| South Atlantic ... ...<br>Slangkop, Z.S.C.<br>(2100m. C.W.) | Oct. 1st to 31st, 1936. | 16 " A " | 162 | 83 | 27 | 68 | — | Not known. | Not known. |
| South Atlantic ... ...<br>Lat. 30° S. to 40° S.<br>Long. 10° E. to 20° E.<br>(600m.) | Oct. 1st to 31st, 1936. | 16 " B" | 31 | — | 27 | 87 | — | — | Not known. |
| South Indian Ocean ...<br>Perth, V.I.P.<br>(2100m. C.W.) | Oct. 1st to 31st, 1936. | 10 " A " | 100 | 50 | 36 | 86 | — | Not known. | Not known. |
| Southern Ocean ... ...<br>Lat. 30° S. to 50° S.<br>Long. 70° E. to 80° E.<br>(600m.) | Oct. 1st to 31st, 1936. | 5 " B " | 16 | — | 16 | 100 | — | — | Not known. |
| South Pacific ... ...<br>Lat. 30° S. to 50° S.<br>Long. 170° W. to 180° W.<br>Wellington, Z.L.W.<br>Auckland, Z.L.D.<br>(600m.) | Oct. 1st to 31st, 1936. | 6 " B " | 19 | 3 to Z.L.W.<br>1 to Z.L.D.<br>1 to Z.L.B. | 11 | 84 | — | — | Not known. |
| Indian Ocean ... ...<br>Colombo, V.P.B.<br>(2100m. C.W.) | Oct. 1st to 31st, 1936. | 16 " A " | 138 | 65 | 55 | 87 | 8 | Not known. | Not known. |
| Arabian Sea ... ...<br>Lat. 10° N. to 20° N.<br>Long. 50° E. to 60° E.<br>(600m.) | Oct. 1st to 31st, 1936. | 24 " B" | 93 | — | 86 | 92 | — | — | Not known. |
| Mediterranean Sea and Red Sea.<br>Long. 0° to Long. 43° 30′ E.<br>(2100m. C.W.) | Oct. 1st to 31st, 1936. | 26 " A " | 320 | — | 251 | 78 | 29 | — | Not known. |
| Eastern North Atlantic, north of Lat. 38° N. worked by Roll Call.<br>Portishead, G.K.U.<br>(2100m. C.W.) | Oct. 1st to 31st, 1936. | On Roll Call 296 " A " | 592 | 371 | — | 63 | 253 | 624<br>All reports registered by ships as sent received by Weather London. | Not known. |

## TABLE III.—Number of Observations received by Weather London through Portishead Radio from British "A" Selected Ships.

| April, 1936. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan., 1937. | Feb. | March. | The Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 504 | 570 | 622 | 614 | 662 | 652 | 624 | 578 | 513 | 465 | 451 | 506 | 6,761 |

## TABLE IV.—Number of Observations received by Weather London through Malin Head and Valentia Radio from British "B" Selected Ships, and Supplementary Weather Reporting Ships.

| | April, 1936. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan., 1937. | Feb. | March. | The Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Malin Head ... ... | — | — | — | 9 | 12 | 11 | 20 | 21 | 11 | 8 | 7 | 24 | 123 |
| Valentia ... ... | — | — | — | 83 | 62 | 55 | 58 | 85 | 88 | 176 | 161 | 148 | 916 |
| Total ... ... ... | — | — | — | 92 | 74 | 66 | 78 | 106 | 99 | 184 | 168 | 172 | 1,039 |

## TABLE V.—Number of Weather Reports received by Weather London from Ships in Home Waters.

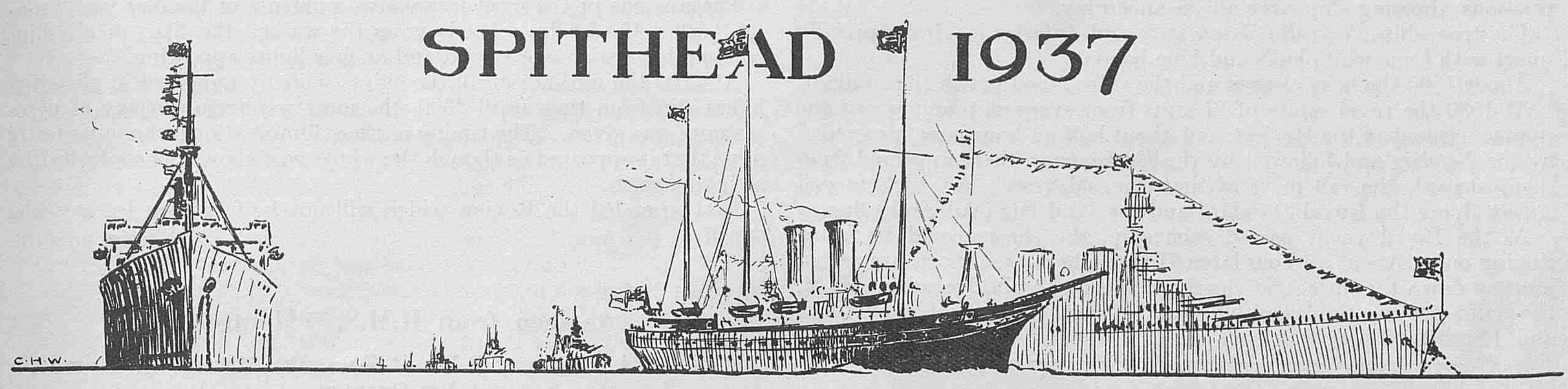
| April, 1936. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan., 1937. | Feb. | March. | The Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 133 | 145 | 158 | 154 | 138 | 134 | 129 | 133 | 126 | 126 | 140 | 1,652 |

## TABLE VI.—Details of Voluntary Observing Fleet and Coast Stations.

| | At 31st March. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1937. | 1936. | 1935. | 1934. | 1933. | 1932. | 1931. | 1930. | 1929. | 1928. | 1927. |
| No. of M.L. Ships ... ... ... ... | 29 | 41 | 49 | 50 | 49 | 65 | 101 | 120 | 123 | 123 | 122 |
| No. of Form Ships ... ... ... ... | 323 | 312 | 298 | 304 | 300 | 307 | 386 | 355 | 364 | 373 | 369 |
| No. of Stationary Training Ships and Lighthouses. | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total No. of Observing Ships ... ... | 357 | 358 | 352 | 359 | 359 | 382 | 497 | 485 | 497 | 506 | 501 |
| No. of Form 911 Ships with whole or part Meteorological Office instrumental equipment. S. | 220 | 200 | 190 | 183 | 169 | 126 | 93 | 31 | 31 | 32 | 29 |
| C.C. | 18 | 17 | 17 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| No. of Selected Ships ... ... ... ... | 281 | 285 | 287 | 292 | 299 | 306 | 312 | 290 | 289 | 268 | — |
| No. of Ships with Instruments on Board: returns overdue | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| No. of Coast Stations and Light Vessels equipped with instruments for Form 914. | 18 | 18 | 18 | 18 | 18 | 18 | 30 | 31 | 31 | 32 | 32 |
| No. of Barometer errors ascertained or checked. | 1156 | 1143 | 1196 | 1169 | 1190 | 1353 | 1357 | 1192 | 1362 | 1398 | 1426 |
| Meteorological Logs ... ... ... ... | 88 | 102 | 119 | 122 | 126 | 221 | 285 | 266 | 275 | 279 | 274 |
| Ships' Meteorological Records (Forms 911)... | 2544 | 2429 | 2377 | 2352 | 2169 | 2660 | 2686 | 2375 | 2290 | 2261 | 2095 |
| Forms 914 (Coast Observations) ... ... | 215 | 215 | 215 | 216 | 216 | 353 | 363 | 372 | 371 | 383 | 367 |
| No. of Wireless Weather Reports addressed to Weather London received through:— | | | | | | | | | | | |
| Portishead ... ... ... ... | 6761 | 6278 | 5595 | 5443 | 5064 | 5175 | 5206† | — | — | — | — |
| Valentia ... ... ... ... ... | 916 | — | — | — | — | — | — | — | — | — | — |
| Malin Head ... ... ... ... | 123 | — | — | — | — | — | — | — | — | — | — |
| Lighthouse Registers ... ... ... | 4 | 4 | 4 | 13 | 9 | 17 | 8 | 18 | 10 | 12 | 10 |
| Home Waters Telegraphic Reports ... ... | 1652 | 1650 | 854 | 838 | 972 | 875 | 720 | 701 | 751 | 773 | 674 |
| Cadets Meteorological Log ... ... ... | 8 | 10 | 9 | 9 | 7 | 11 | 8 | 9 | 9 | 7 | 10 |
| DATA EXTRACTION. | | | | | | | | | | | |
| Logs collected since 1920 extracted... ... | 190 | 40 | 137 | 131 | 191 | 175 | 50 | 41 | 100 | 166 | 174 |
| Logs collected before 1920 extracted ... | 544 | 295 | 309 | 441 | 97 | — | — | — | — | — | — |

† 11 months.

# THE NAVAL REVIEW
# SPITHEAD 1937



## On board R.M.S. " Otranto."

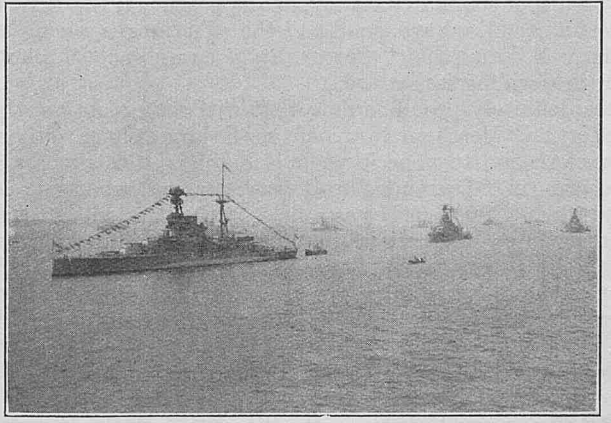
CAPTAIN L. V. JAMES, D.S.C. OBSERVER, LIEUT. R. B. STANNARD, R.N.R. 2ND OFFICER.

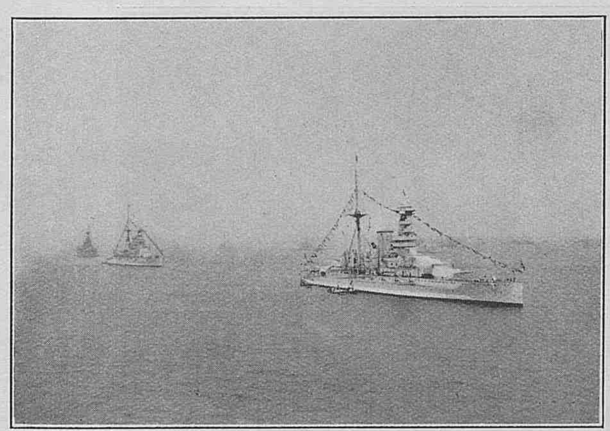
MAY 20TH was a lovely summer day, with a slight haze, not sufficient to mar the imposing scene of the fleet at anchor.

To enable our passengers to get a close view of the fleet, we entered the lines at 0900, steaming at slow speed and timing ourselves to be in our position west of Sturbridge Shoal at 1015.

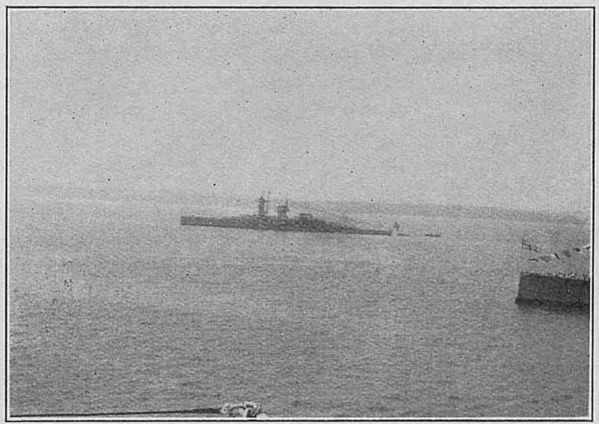
As we slowly steamed to the westward, we saw a spectacle that will never be forgotten—the power of the navy, from the mightiest of our fighting ships to the smallest drifter, each dressed over all.

On our port side, headed by the *Nelson* and *Rodney,* lay the Home and Reserve Fleets, while to starboard lay the Mediterranean and Dominions Fleets headed by the *Queen Elizabeth,* the sun showing up the darker hue of the former against the light grey of the latter.





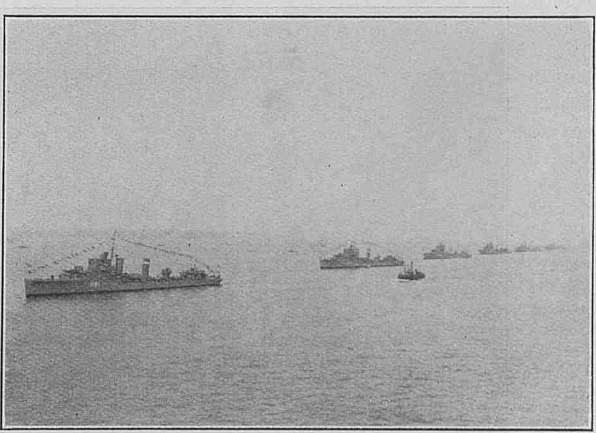
Beyond the Home Fleet we could see the varying greys of the foreign representative ships, headed by the Admiral RODMAN'S war-time flagship, *New York* which contrasted strangely with the French and German pocket battleships, the *Dunkerque* and *Graf Spee.* The U.S.S.R. *Marat* was easily distinguishable by her oddly shaped foremost funnel.



Beyond the Mediterranean Fleet lay the various County Class Cruisers and the latest destroyers. We passed the well-remembered *Iron Duke,* Admiral JELLICOE'S old Flagship which is now in the Reserve.

As we approached the half-way line, the unorthodox shapes of the aircraft carriers loomed up, with the midget forms of the submarines beyond them. To port were the C. Class Cruisers, which have been converted to High Angle defence ships.

A few minutes later we came to the latest cruisers, *Southampton* and *Newcastle,* very impressive with their air of extreme efficiency. Following on, we came to the *Cairo,* Destroyer Flagship. We passed through the lines of Home fleet Destroyers and rounded west of Ryde Middle Shoal, coming upon that fine old lady, the *Aquitania,* with her enormous span of flags flying from stem to stern.



At 1018, we dropped anchor and dressed ship, one and a quarter cables west of Sturbridge Shoal with the *Orontes* lying next to us.

During the forenoon, a continuous procession of merchant vessels, freshly painted and with masthead flags flying, arrived to take up their positions, dressing ship over all on anchoring.

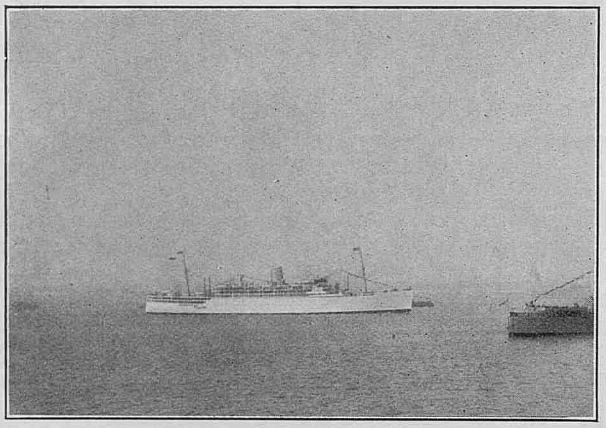
The troopships *Neuralia*, *Lancashire* and *Dilwara* looking especially smart with their white hulls and blue bands.

About 1500 the haze cleared and the ships stood out in the sunlight.

At 1530 the royal salute of 21 guns from every ship announced the commencement of the Review, and about half-an-hour later, proceeded by the *Patricia* and followed by the *Enchantress*, there appeared from the eastward, the tall mast of that fine old vessel, the *Victoria and Albert*, flying the Royal Standard and the Lord High Admiral's flag.

As the Royal yacht passed each ship, the cheers could be heard ringing out. About an hour later, H.M. yacht passed us on her return journey down the lines, and clearly visible on the bridge we saw H.M. the KING wearing the broad blue band of the Garter, H.M. the QUEEN and PRINCESS ELIZABETH.

Following the *Enchantress* was the *Strathmore*, one of the finest looking of the merchant ships, with her gleaming white hull and upper works and single yellow funnel. She had a great number of distinguished Dominion and foreign guests on board.



At 1745, the Fleet Air Arm having dipped over the Royal yacht, zoomed overhead on their return, looking like flights of birds in wonderful formation.

Perhaps one of the most impressive moments of the day was " sunset " when the bugles echoed across the water; the flags of all ships coming down with one accord and anchor lights appearing.

At 2200 the outlines of all the ships suddenly appeared in glittering lights and from then until 2300, the most wonderful display of pyrotechnics was given. The timing of these illuminations was so perfectly done that it appeared as though the whole vast show was controlled by a single switch.

And so ended the Review which will not be forgotten by any who saw it.

## As seen from R.M.S. "Montrose."

CAPTAIN A. MEIKLE, R.D., R.N.R. BY MR. H. S. KNIGHT, 1ST OFFICER.

SAILING from Liverpool on Tuesday, 18th May at 3.30 p.m., with " Royal Empire Society " on board, the *Montrose* arrived on the Wednesday evening, and picked up her berth 291° 2·1 cables from W. Sturbridge Buoy.

It had been hazy weather approaching the Nab Tower; but, this haze became less apparent as the ship drew near to the Fleet, and passed between the lines.

Everyone on board had been on the " Tip toe " of expectancy during the passage, with reference to what they were about to see; and, the sight which met their eyes, of the evidence of " Britain's Might," more than justified this state.

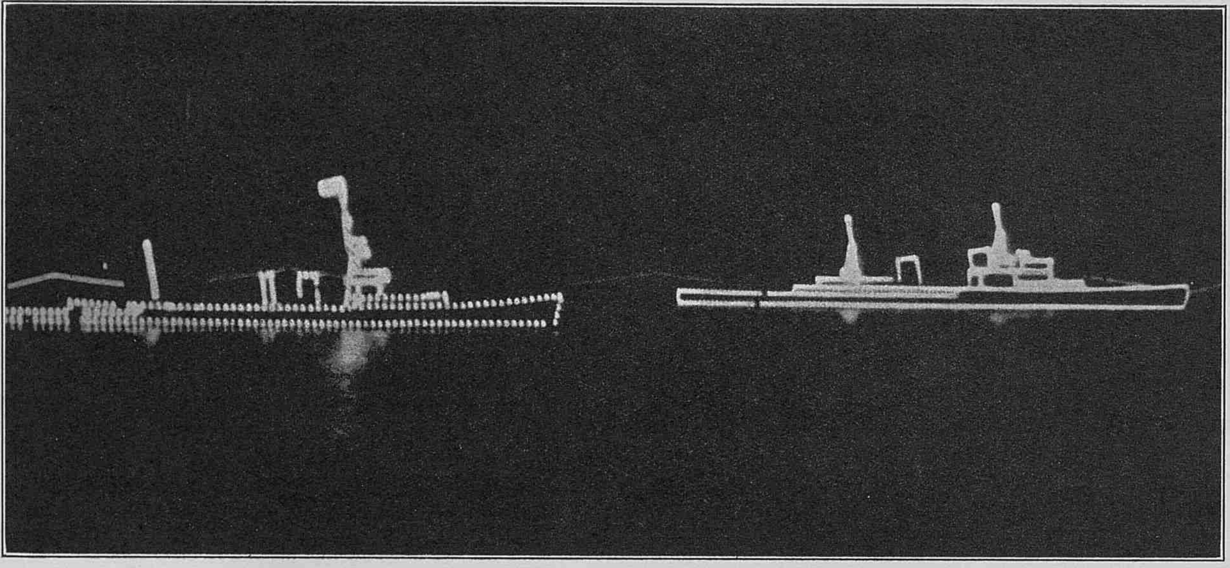
Comparisons were naturally made between the representative ships of the Foreign powers, especially with the French ship *Dunkerque* as she was the latest vessel afloat in the lines. Another vessel that caused comment was the *Graf Spee*, the German pocket battleship, which had the legend " Coronel " prominently displayed, and was a very trim craft.

The evidence of " quiet efficiency," so apparent on the British Ships, to even the unpractised eye, soon had the effect of reassuring everyone that " all's well," and that " Personality " as well as " Strength " is a big factor in deciding issues.

We were definitely proud to note that without exception, the representatives of the " Merchant Navy " from the largest liner to the smallest coaster were second to none in their cleanliness and trim appearance. Their precision in " Dressing Ship " was amazing, when one considers that they were acting together as a fleet, without previous rehearsal.

With regard to the Review, just before the coming of the Royal Yacht, the ships were " wind rode " and not " tide rode." This had the effect of making the ships appear rather out of line; but on the Yacht's return journey, the tide had gained in strength, and the wind was less.

The *Victoria and Albert* with H.M. the KING and Royal Party on board, accompanied by other vessels and escorted by Trinity House Yacht *Patricia*, passed through the lines to sounds of tremendous



bursts of cheering as she passed each ship, and from our berth we had a very excellent view of the Yacht and their Majesties as she steamed close to the Foreign Warships on her return through the lines. As she passed us, three spontaneous cheers led by the Captain were given by ship's company and passengers in unison.

The Royal Yacht, on completion of her tour, went to her moorings at the head of the Fleet; and then the Fleet Air Arm carried out a curtailed programme as the visibility overhead was deteriorating.

A fitting climax to the day's Review was seen in the illuminations and firework display from 10 p.m. to midnight. One could rhapsodize indefinitely on the magnificence of this fairylike spectacle; but here again, I will content myself by saying that the accurately timed programme must have been most carefully arranged, and the precision with which it was carried out was positively uncanny.

At 11.15 a.m. on Friday, we left our moorings and returned to Liverpool.

If the Review has been the success in Naval eyes as it was in the eyes of the lay observer, it has been a triumph indeed.

## As seen by P. & O. S.S. "Ranchi."

CAPTAIN J. A. SMITH. BY MR. G. M. FARMILOE, 4TH OFFICER.

ON arriving at Spithead early Thursday morning we found everything in readiness for this Review of Reviews, with hundreds of warships, including eighteen foreign ships representing the same number of countries, formed up in eight lines running East and West, approximately six miles long. To the North were Cruisers, Submarines, and Destroyers, also various vessels of the Fishing Fleet; to the South were the Foreign Warships and ships of the Merchant Navy. In the centre were two lines of England's largest ships headed by H.M.S. *Queen Elizabeth* and H.M.S. *Nelson.*

Embarking a pilot, we proceeded down the stately lines of warships; it certainly was a grand sight. The absence of the sun and the presence of mist made the " dark grey " ships of the Home Fleet look more grim than their just as deadly " light grey " sisters of the Mediterranean Fleet, and there was no shining of extra well polished brasswork.

It took fifty-five minutes, steaming at never more than eight knots —the speed limit—to pass right down to the Western end of the line, whence we proceeded to our berth behind the fleet of yachts and other small craft off the North shore of the Isle of Wight.

All Merchant vessels and other craft were in position by 1330 when a gun was fired to warn all ships to anchor or to move out of the Review Area. At this, a strange stillness descended on the water, for, all the morning there had been a countless number of craft of all shapes and sizes darting to and fro between the silent warships.

At 1505 we heard guns fired in salute, which signified that the Royal Yacht had put to sea with His Majesty KING GEORGE on board; but it was not until 1550 that we sighted her coming out of the mist, preceded by the Trinity House yacht *Patricia* and followed by the Admiralty yacht *Enchantress.* It made a superb picture, the Royal Yacht surrounded by the dark warships shrouded in the mist. Slowly she became more distinct as she proceeded along the line of ships; and then out of the mist came the *Strathmore* and four other liners carrying Government guests, making in all a fine Cavalcade of ships. At 1615 the Royal Yacht reached the Western end of the lines, turned, and came gracefully past us. At this moment the sun shone brilliantly and the *Victoria and Albert* made a magnificent sight with all the Destroyers in the background and the gaily flag-bedecked yachts and liners in the foreground. The KING could be seen quite distinctly with the aid of binoculars, standing on the bridge acknowledging the salutes of his fleet. Having passed us, the Royal Yacht slowly disappeared into the thickening mist to the Eastward, having been right around the fleet. And so, for us, this magnificent Review came to an end, except for the " fly over " by the Fleet Air Arm, which took place at 1730.

One feature that was very noticeable was the splash of colour provided by the Merchant ships, in contrast with the grey of the Navy.

The mist cleared, and at 2200, with what seemed like a single movement, the illuminating lights of each of H.M. Ships were turned on. These lights showed up each ship in outline and this made an astonishingly fairy like spectacle.

When one stops to think, one realises the great amount of accuracy required in the organisation of such a Review. Everything was planned to the nearest detail. Before we sailed we knew our every movement and that of all the other Merchant vessels taking part.

## As seen from T.S.S. "Voltaire."

CAPTAIN V. E. GORE HICKMAN. BY LIEUT. E. W. HARDIE, R.N.R.
1ST OFFICER.

T.S.S. *Voltaire* arrived off the Nab Tower at 0520 and sunrise promised a day of warm sunshine and good visibility. Passing the Warner Light Vessel at 0800 the ship, steamed between E. and F. lines to her appointed berth off S.E. Ryde Middle Buoy and anchored at 0930, the anchorage being marked by a Dan buoy with the Company's house flag.

Passing Horse Sand Fort, as far as the eye could see stretched long lines of warships, perfect in their positions, every ship a hive of activity putting the finishing touches to paintwork which already looked spotless and brasswork which gleamed in the morning sun. Several ships were practising cheering ship as we passed and many were the admiring comments on the smartness of the men. Great interest was shown in the foreign men of war and one could not help wondering what their crews thought of such a vast array of Britain's naval power. Every ship looked perfect, many appearing in unfamiliar colours. The *Hood* looked less grim though just as powerful in her light Mediterranean grey as did the *Queen Elizabeth* and *Repulse.* It was pleasing to see that grand old ship *Iron Duke* still with the fleet. Ships were dressed overall and a more inspiring sight could hardly be imagined.

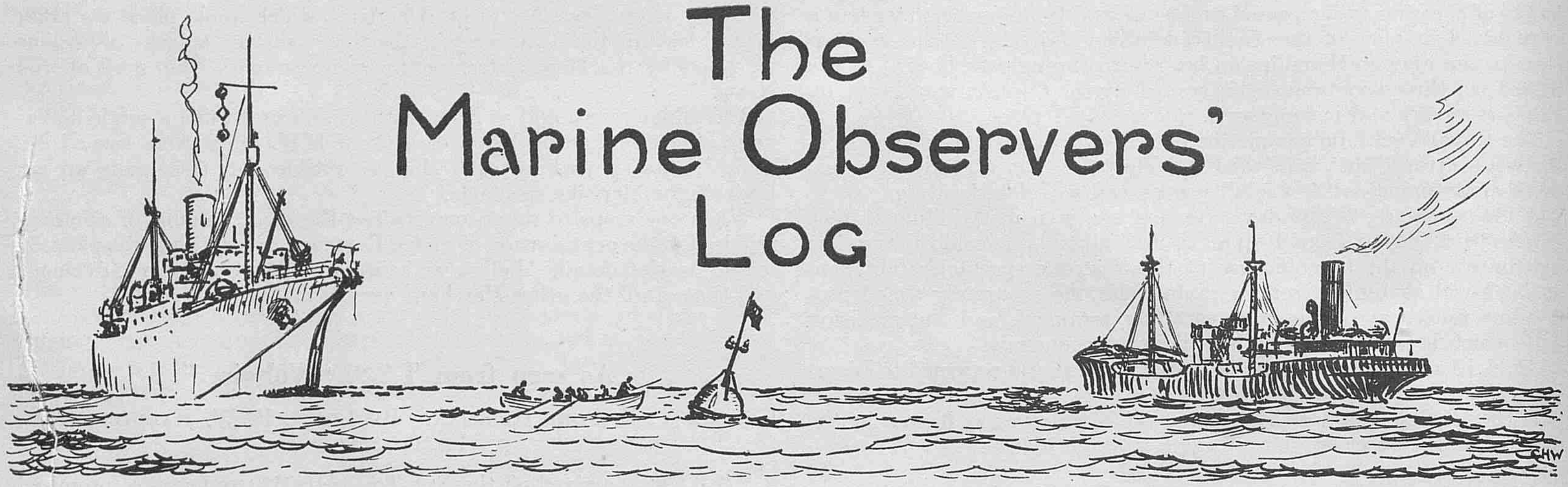
About 1300 the visibility became moderate and from our berth the battleships were no longer visible and concern was felt that the illuminations would be spoilt. Our fears however proved groundless, a light breeze springing up and dispersing the smoke and haze.

Later the salute of guns was faintly heard over the water and we knew that the Royal Yacht with the KING on board had left Portsmouth harbour. Preceded by the Trinity House yacht *Patricia* the Royal Yacht passed us about 1615 and we could plainly see the KING standing at the salute. The Royal Yacht was followed by the Admiralty yacht *Enchantress, Strathmore, Vandyck, Rangitiki, Laurentic* and *Cameronia* and they seemed to rival the ships of the fleet in their spotless perfection. The Merchant Navy was indeed well represented not only by these ships but also by vessels of all size and classes, from the *Aquitania* to the smallest fishing vessel.

Promptly at 2200 the whole fleet was silhouetted in light and one could distinguish the flagships by their masthead flags picked out in light. It was indeed a beautiful sight and one that will long be remembered. Suddenly the whole fleet was darkened and numerous searchlights began to weave patterns in the sky, the low cumulus clouds making the display more effective. All the lights went on suddenly again and after a short interval the ships were again darkened and rockets were fired by the entire fleet throwing out coloured stars of red, white, and blue. The fleet was again illuminated and remained so until midnight.

The whole review impressed us by the perfect organization and the precision with which everything was carried out, and we realized perhaps for the first time the greatness of Britain's sea power.

# The Marine Observers' Log



## July, August and September.

It is hoped that these pages will be filled each quarter with a selection of the contributions of Mariners in manuscript, or remarks from the Logs and Records of regular Marine Observers.
Responsibility for statements rests with the Contributor.

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### GREAT WAVES IN MID-OCEAN AS OBSERVED FROM A SMALL YACHT.

By Commander R. D. Graham, R.N.

Cutter Yacht "Emanuel."

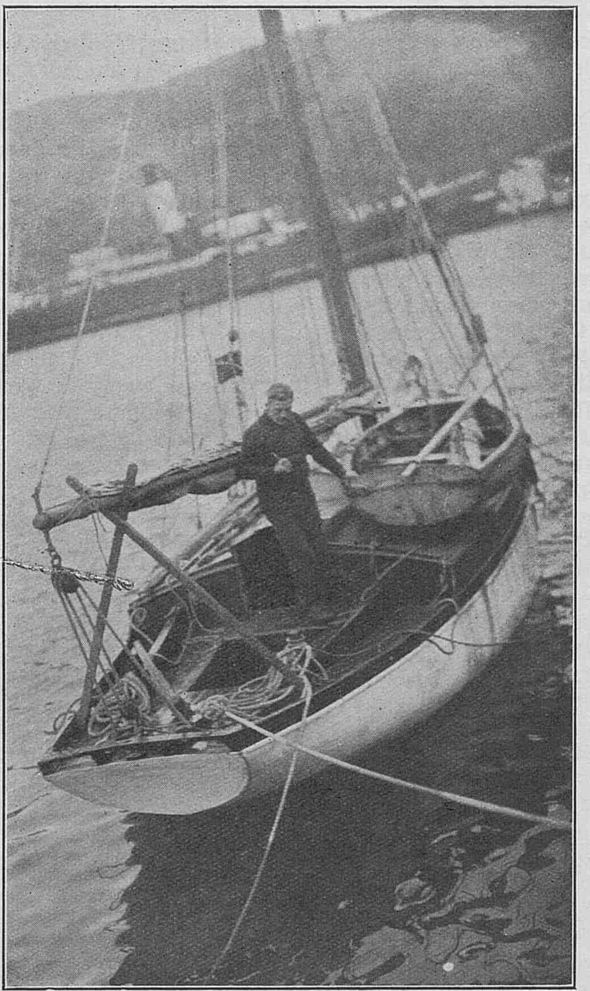
In The Marine Observer for May, 1930 and July, 1934 are two articles of extreme interest on the shape, size and speed of waves. They are naturally written from the scientific and from the big ship point of view where the possible synchronization of the periods of the ship and the waves is of importance.

May I put forward a plea for observations on behalf of small craft? There must be thousands of yachts cruising round the British Isles; an increasing number make ocean voyages. In a few years time there will be none other but yachtsmen to keep alive the tradition of sail.

Now from the point of view of a small craft, say up to 50 feet water line, the size and shape of waves is a matter of supreme indifference provided that she is properly handled. I mean, of course, as regards the safety of the ship in open water. The size of the waves naturally determines the speed at which she may be allowed to sail and the degree of discomfort to which her crew are subjected, and possibly her ability to claw off a lee shore.

Properly handled means that the way must be got off her, either by heaving to, lying to a sea anchor ahead or astern, or lying "a try." We should like to revive this old expression for lying without any sail at all.

What becomes of utmost importance is the size or height of the actual breaking crests. There seems little published information. I remember one statement to the effect that in a gale of wind in the Bay of Biscay the waves were breaking one third of their height. Supposing the waves were 25 feet this would give approximately 8 feet for the crest. Unfortunately I am unable to verify the reference; the foam from the crest might easily run down one-third of the face of the wave and might give rise to the above statement, but in actual fact the real height of the breaking crest might be less. Claud Worth in "Yacht Cruising" speaks of the perpendicular crest as seldom more than 12 or 15 inches high, but he probably had in mind a summer gale in the English Channel, and not the full fury of a North Atlantic storm.



**At St. Johns after Atlantic passage single handed.**

During a single-handed voyage in a seven ton yacht (25 feet water line) in November, 1934, from St. Johns, Newfoundland, to Bermuda, I had the opportunity of making a peculiarly intimate acquaintance of the breaking crests of waves. I have related the whole story of the voyage elsewhere,* but here it may suffice to state that the passage, about 1,100 miles, took 23 days and consisted of continual gales except for two periods of flat calm, one of which lasted five days. After several "fresh" gales, during which my sea anchor wore out, the weather worked up into a storm of quite incredible fury on November 16th in Latitude 38°20′N., Longitude 59°36′W. I say storm for that expresses my idea of it; actually I estimated the wind at force 10 which is technically a whole gale, but it might really have been anything. The lowest barograph reading was 28.90. The position given above is very approximate since a few days later, when it was possible to get sights, my longitude was some two degrees westward of my D.R. It was of interest to find later that the meteorological officer at Bermuda had postulated a disturbance in this area.

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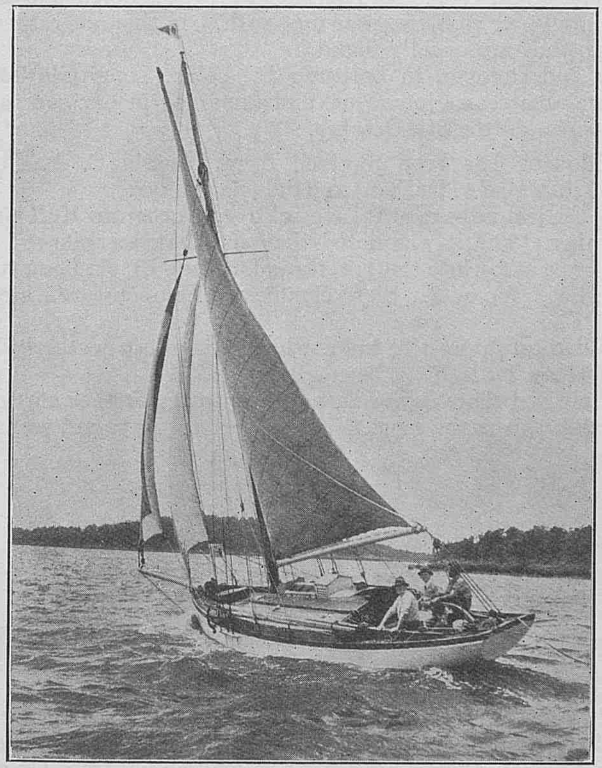
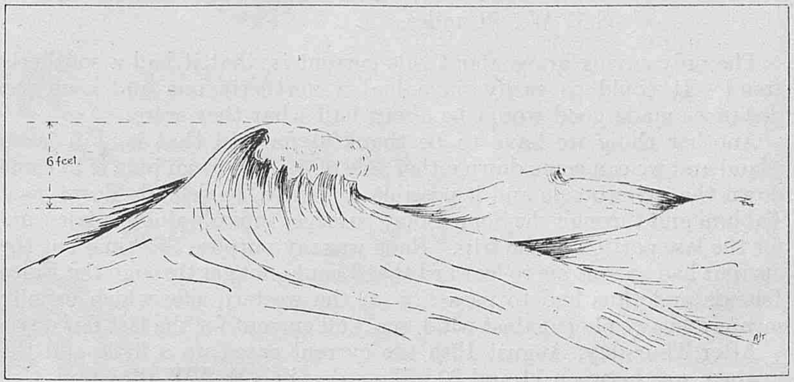
* "Rough Passage," by Commander R. D. Graham. Blackwood.

I had hove to under trysail and reefed staysail; in the middle of the night the former split. The lowest part collapsed overboard taking half the main boom with it, while the upper part flew up aloft and wrapped itself round the cross trees. I expected it to take the mast out of her. I got down the staysail and lay for the rest of the night without any sail at all, spending most of my time at the pump. The cockpit was not a water-tight one and although I had partially filled it with spare sails a lot of water came down below. In the morning I hoisted three or four feet of the staysail, put out hawsers astern and let the ship run before it. One hawser had the broken half of the boom attached to the end, and the other had a bunch of old ropes and a motor tyre. She made excellent weather of it though the size of the seas was terrifying. The wind, starting at S.W. had veered to W. or W.N.W. and raised a cross sea which from time to time made the tops of the waves rise up into steep pyramids, but as long as they did not break she forged slowly ahead and rose buoyantly to them. Occasionally, perhaps once or twice in an hour a breaking crest would fall on top of her, but stern to sea she seemed much better able to resist the blow than while lying broadside-on in the trough. Had it not been for my fear that these breaking crests would actually smash in her side or deck I would have continued to lie a try. Some ten days later I arrived safely at Bermuda.


Sailing with Friends at Bermuda.

Now for my observations of breaking crests. With wind up to force 7 or 8 the top two or three feet of the wave collapses and falls forward without definitely curling over; it is not dangerous. With wind force 10 the tops of the seas develop into actual breakers; the top of the wave curls over in exactly the same manner as with breakers on a beach. I distinctly remember looking up at a wave and seeing the solid blue water in a concave curve under the lip of the falling crest. I have stated in print that I estimated the total height of the waves as 30 feet. I have read somewhere that this was the maximum height which was ordinarily reached and did not wish to be accused of exaggeration. Since reading THE MARINE OBSERVER I suspect they were higher.

My estimate of the actual height of the " breaker " is six feet. This sounds little enough and may be innocuous to a large ship; to a small one it occasions a very real danger.



It is a pity that at the time I was not acquainted with the articles in THE MARINE OBSERVER and that I made no observations on the periods of the waves. I do, however, remember sitting in the cockpit and thinking of WORTH'S 15 inches and trying to observe what was the actual height of the crests. I hope that officers in larger ships will record some observations on this point. Their frame of mind will be better for accurate observations in ships which have a greater freeboard than the 24 inches of my yacht.

There is one minor point which I should like to raise. It is often stated that a ship loses the wind when in the trough of a sea and that this is one reason why a large sailing ship keeps her topsails set after furling the courses. My impression is that this is wrong and that it blows just as hard in the hollows as on the tops.

## CURRENT BETWEEN GILBERT AND ELLICE ISLANDS, SOUTH PACIFIC.

THE following is an extract from a report to the London Missionary Society by Captain T. HOPE EVANS, A. S. *John Williams V*, received through the Hydrographer of the Navy.

8th August, 1936 we left Beru at 6.00 p.m. When we left Beru we ran into a nasty head wind which retarded the vessel's speed. As I had set a course high enough I thought to counteract the strong current we had experienced on the way to Beru, I was very surprised next morning to find the vessel some 30 miles to leeward of the position I had calculated, and that in some 13 hours, but with the dawn the wind shifted a little and allowed the sails to be set which, although they sent the vessel farther to leeward, added a little to her speed, yet, in spite of this added speed I passed quite close to the Island of Tamana instead of Ararau. I may state that Tamana lies some fifty miles to leeward of Ararau.

To show the effect of this strong current on the vessel's progress and courses, I think the best plan for me will be to give you the vessel's actual positions and the ones calculated by dead reckoning. To thoroughly appreciate the effect these positions should be pricked on a chart.

August 9th. Lat. D.R. 2° 4′ S. Long. 176° 59′ E.
Lat. Obs. 2° 18′ S. Long. 176° 03′ E.
Course steered S. 36° E. Course made good S.6°E.
Distance 57 miles. Current S.69°W., 27 miles in 17 hrs.
August 10th. Lat. D.R. 3° 35′ S. Long. D.R. 176° 59′ E.
Lat. Obs. 3° 55′ S. Long. Obs. 176° 15′ E.
Course steered S.36°E. Course made good S.6°E.
Distance 95 miles. Current S.65°W., 48 miles.
August 11th. Lat. D.R. 4° 35′ S. Long. D.R. 176° 43′ E.
Lat. Obs. 4° 51′ S. Long. Obs. 176° 22′ E.
Course steered S.35°E. Course made good S.8°E.
Distance 57 miles. Current S.56°W., 26 miles.
August 12th. Lat. D.R. 6° 30′ S. Long. D.R. 177° 05′ E.
Lat. Obs. 6° 26′ S. Long. Obs. 176° 16′ E.
Course steered S.26°E. Course made good S.3°W.
Distance 98 miles. Current S.83°W., 49 miles.

August 13th. Lat. D.R. 7° 41′ S. Long. D.R. 177° 11′ E.
Lat. Obs. 8° 01′ S. Long. Obs. 176° 46′ E.
Distance 100 miles. Course steered S.36°E. Course made good S.17°E. Distance 100 miles. Current S.51°W., 31 miles.

The only saving grace about this current is, that it had a southerly trend. It could as easily have had a northerly one and then the distances made good would be about half what they were.

Another thing we have to be thankful for and that is, Fiji is an island and we can come down either side of it. My usual plan is to come down the eastern side and if possible amongst the islands down past Tabiuni and through the Somo Somo passage, thus obtaining a fair wind for the last portion of the trip. Such was my purpose this time but the current had so sent me to leeward that I could not get through the Ellice Islands and thus had to pass Fiji on the western side which usually means a heavy plug against wind, sea, and current for the last few days.

After Thursday, August 13th the current eased up a little and the average was between 11 and 20 miles a day in a W.S.W. direction with the exception of the day we sighted Fiji when it ran to the W.N.W. instead for a change.

On the whole and in spite of the current we had a fair trip and the weather continued fine all the way. We arrived at Suva early Thursday morning, August 20th, twelve days from Beru, which, considering all things, was not a very bad effort.

## COUNTER-EQUATORIAL CURRENT.

### Pacific Ocean.

The following is an extract from the Meteorological Log of S.S. *Makura*. Captain D. MacDonald. San Francisco to Papeete. Observer, Mr. J. N. Collins, 3rd Officer.

4th August, 1936, 2142 G.M.T., Latitude 4° 48′ N., Longitude 139° 25′ W., Course 207½°. Wind S. by E. force 4. Temperature of air and sea 81°F. Slight sea and S.E. swell. Current experienced during past 24 hours, 102°, 1·3 knots. While in the middle of the counter-current passed through distinct current rips, approximately ¼ mile wide, and stretching in an East and West direction. On 5th August, 1936, after passing through these rips, a strong N.W'ly current was experienced, showing that the rips marked the junction between the counter and southern equatorial currents.

Current; Noon, 4th August, 1936, Latitude 4° 48′N., Longitude 139°W. to Noon 5th August, 1936, Latitude 0° 35′S., Longitude 142° 05′ W., was N.30° W., 32 miles.

## RIPS.

### North Atlantic Ocean.

The following is an extract from the Meteorological Record of M.V. *Cape of Good Hope*. Captain A. T. McGlashan. Copenhagen to Durban. Observer, Mr. R. J. Carnochan, 2nd Officer.

21st September, 1936, at 0955 G.M.T., vessel encountered tide or current rips. Approximate position, Latitude 10° 22′ N., Longitude 17° 31′ W. The rips extended in a W.N.W.–E.S.E'ly direction, stretching from horizon to horizon and about one and a half miles in breadth. They appeared to be in succession like a sharp choppy sea with oily calms of smooth water and swirls in between. The vessel was steaming 141° true at 10·5 knots; wind S., force 2. Barometer 29·77 inches corrected. Air temperature, 80° F., Sea, 77° F. Similar but much smaller rips were observed at 1245 G.M.T. in approximately Latitude 10° 00′ N., Longitude 17° 10′ W. There was no marked change in the surface temperature, which remained at 77° F. throughout.

## MAGNETIC DISTURBANCE.

### South Indian Ocean.

The following is an extract from the Meteorological Record of S.S. *Ceramic*. Captain H. C. Elford. Liverpool to Sydney. Observer, Mr. G. F. Cresswell.

28th August, 1936. With reference to magnetic disturbance in the South Indian Ocean, ex. S.S. *Berwickshire*, in the October number of The Marine Observer, this vessel has experienced almost identical abnormal deviations on successive voyages for several years, on the E.S.E.'ly compass courses, when proceeding from Cape Town to Freemantle.

In Latitude 40° S., Longitude 40° E., with normal deviation of 2° W., it was found to increase to a maximum of 7° W. in Longitude 65° E., and then returning to normal in from Longitude 90° to 95° E.

22nd September, 1936. During the present voyage, vessel left Durban with a normal deviation of 3½° W., which remained steady until in Latitude 34° S., Longitude 48° E., and then increased to a maximum of 7° W. in Latitude 38° S., Longitude 60°–65° E.—an increase of 1° less than when in Latitude 40° S.—after which it slowly decreased to normal in Longitude 90° E.

## ALBATROSSES.

### South Atlantic Ocean.

The following is an extract from the Meteorological Record of M.V. *Cape of Good Hope*. Captain A. T. McGlashan. Copenhagen to Durban. Observer, Mr. R. J. Carnochan, 2nd Officer.

28th September, 1936. In Latitude 10° 30′ S., Longitude 02′00′ W., approximately, an albatross was met with. Is this not rather farther north than they are usually found ?

On the 2nd October, in Latitude 21° 13′ S., Longitude 06° 09′ E., three more albatrosses joined us, and remained in our company until off Cape Town on the 8th October.

The following has been received from Captain C. A. Robinson, S.S. *Port Auckland*. Durban to Hull via Dakar.

During the last voyage of this vessel from Durban to Hull via Dakar, in November, 1936, it was noted that an albatross followed the ship from the Cape as far into the Tropics as Latitude 13° S., Longitude 1° E. Wind S.S.E., force 2. Sky cloudless. Temperature: air 71° F., water 69° F.

It would be of interest to know what is the most northerly Latitude in which these birds have been observed.

I have noticed that they seem to be venturing farther north year by year, though this is the most northerly point I have yet seen them.

## WHITE WATER.

### Persian Gulf.

The following is an extract from the Meteorological Record of S.S. *British Corporal*. Captain J. H. Sloan. Abadan to Suez. Observer, Mr. F. S. Hall, 2nd Officer.

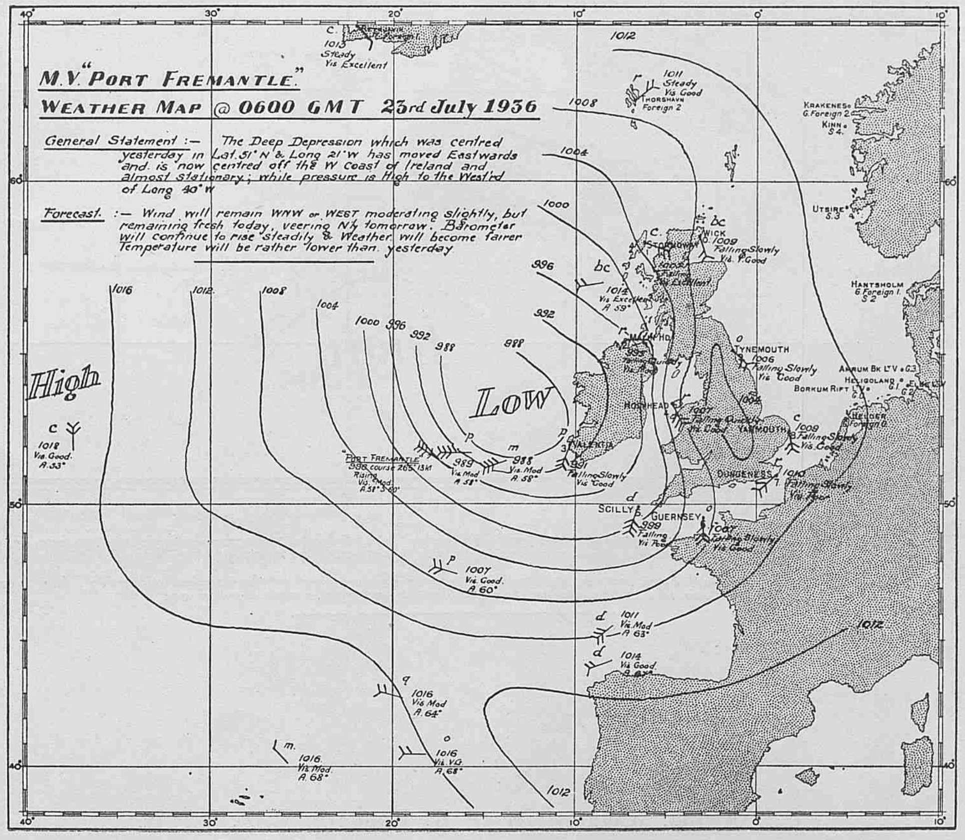
27th September, 1936. Between the islands of Sheikh Shuaib and the Quorins at the entrance to the Persian Gulf, large areas of discoloured water were passed, the colour being of a whitish nature. On examination it was found to be caused by myriads of tiny white particles held in suspension in the water, very much like chalk in suspension. These patches are particularly conspicuous at night when they present the appearance of shoal water, or if the weather is calm they would lead one to believe that the vessel was sailing over white rock. Having made enquiries I am told that the matter in suspension is fish in the embryonic stage and it occurs at regular times of the year when the fish are spawning. The impression of shoal water, which is so very marked, would probably be calculated to alarm strangers to the Gulf.

Similar patches of larger extent, and more frequent, were experienced between Ras al Hadd and Ras Madraka but in this case there was a difference in colour, the colour being a brownish red, almost similar to rusty tank ballast.

# WEATHER FORECASTING AT SEA.

SAMPLES of Weather Charts and Forecasts made at sea by the officers named, being typical examples of the good work referred to in "Work of the Year," page 82.

M.V. *Port Fremantle*. Captain R. S. DURHAM, D.S.O.
Observing Officer, Mr. H. B. WALKER.


M.V. "PORT FREMANTLE."
WEATHER MAP @ 0600 GMT 23rd July 1936

General Statement :— The Deep Depression which was centred yesterday in Lat. 51° N & Long 21° W has moved Eastwards and is now centred off the W Coast of Ireland and almost stationary; while pressure is High to the West'rd of Long 40° W

Forecast. :— Wind will remain WNW or WEST moderating slightly, but remaining fresh today, veering N'ly tomorrow. Barometer will continue to rise steadily & Weather will become fairer Temperature will be rather lower than yesterday

40°
30°
20°
10°
0°
10°
60°
50°
40°
1013
Steady
Vis Excellent
1012
1011
Steady
Vis Good
THORSHAVN
Foreign 2
1008
1004
1000
996
992
988
1016
1012
1008
1004
High
Low
1018
Vis Good
A 33°
KRAKENES
6 Foreign 2
UTSIRE
HANTSHOLM
6 Foreign 1
WICK
STORNOWAY
1009
Falling Slowly
Vis Good
TYNEMOUTH
1006
Falling Slowly
Vis Good
HOLYHEAD
VALENTIA
YARMOUTH
DUNGENESS
SCILLY
GUERNSEY
BORKUM RIFT
HELIGOLAND
"PORT FREMANTLE"
989
Vis Mod
A 58°
1007
Vis Good
A 60°
1011
Vis Mod
A 63°
1014
Vis Good
1016
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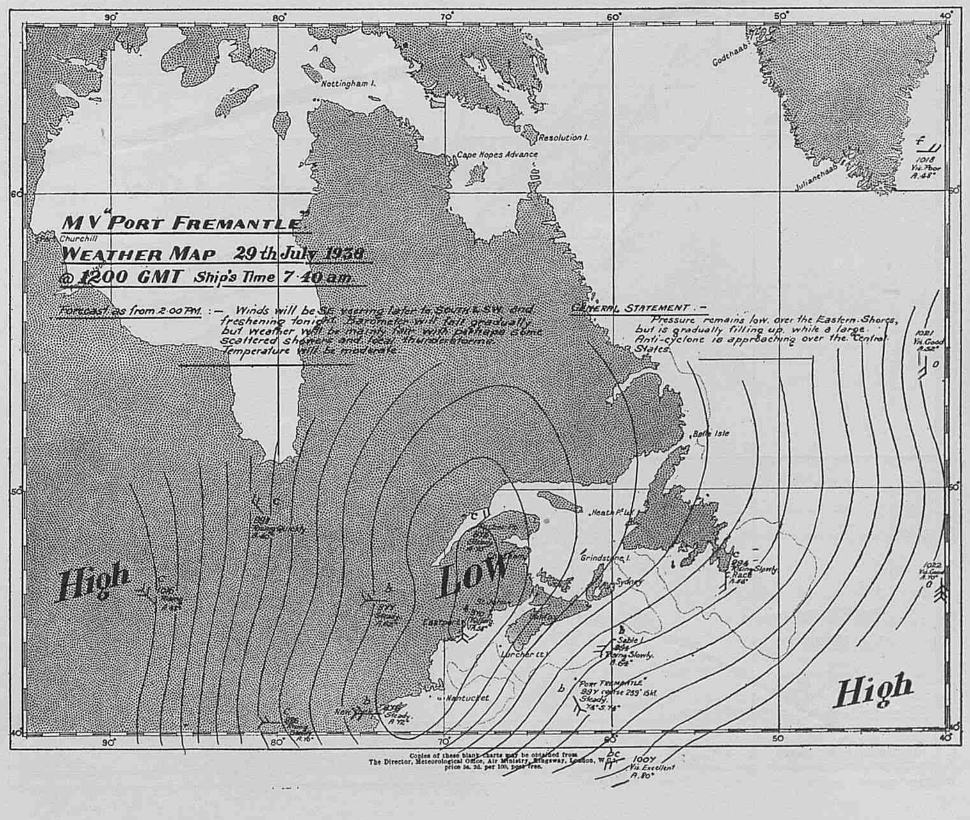
A 64°
1016
Vis Mod
A 68°
1012


M V "PORT FREMANTLE"
WEATHER MAP 29th July 1938
@ 1200 GMT Ship's Time 7·40 am.

Forcast as from 2·00 PM. :— Winds will be SE veering later to SOUTH & SW and freshening tonight. Barometer will fall gradually but weather will be mainly fair with perhaps some scattered showers and local thunderstorms. Temperature will be moderate.

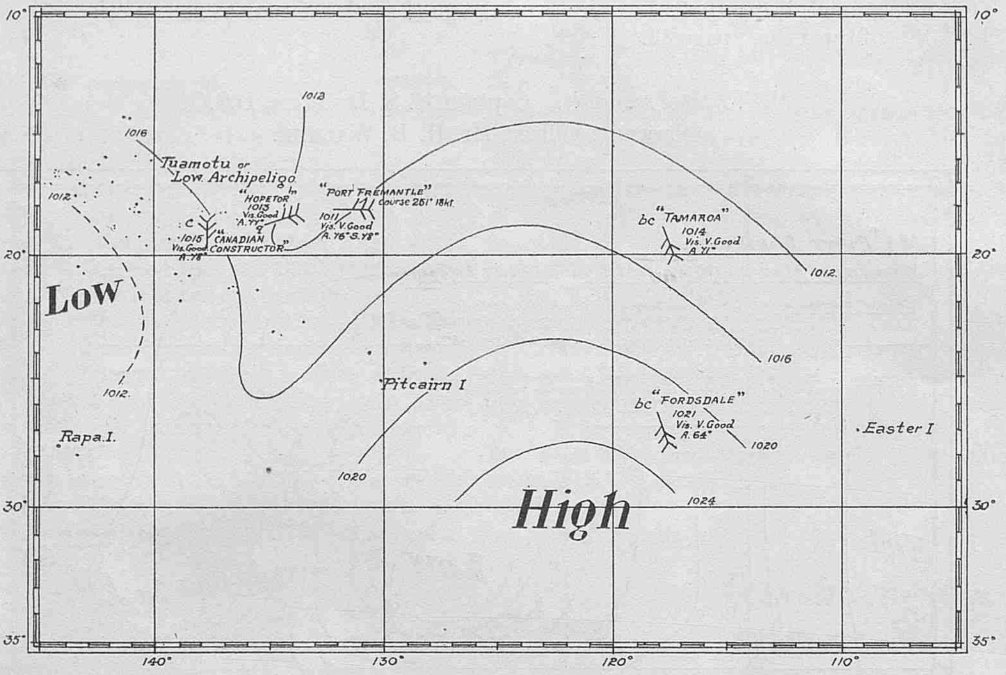
GENERAL STATEMENT :— Pressure remains low over the Eastern Shores, but is gradually filling up, while a large Anti-cyclone is approaching over the Central States.

Copies of these blank charts may be obtained from The Director, Meteorological Office, Air Ministry, Kingsway, London, W.C.2, price 1s. 3d. per 100, post free.

90°
80°
70°
60°
50°
40°
Nottingham I.
Resolution I.
Cape Hopes Advance
Godthaab
Julianehaab
1018
Vis Poor
Churchill
Belle Isle
Heath Pt Lt
Grindstone I.
Sydney
Sable I.
Rising Slowly
A 64°
Lurcher Lt
Nantucket
New York
Steady
A 72°
"PORT FREMANTLE"
course 259° 15M
Steady
74° S 74°
1007
Vis Excellent
A 80°
1021
Vis Good
A 52°
High
Low
High

M.V "Port Fremantle".

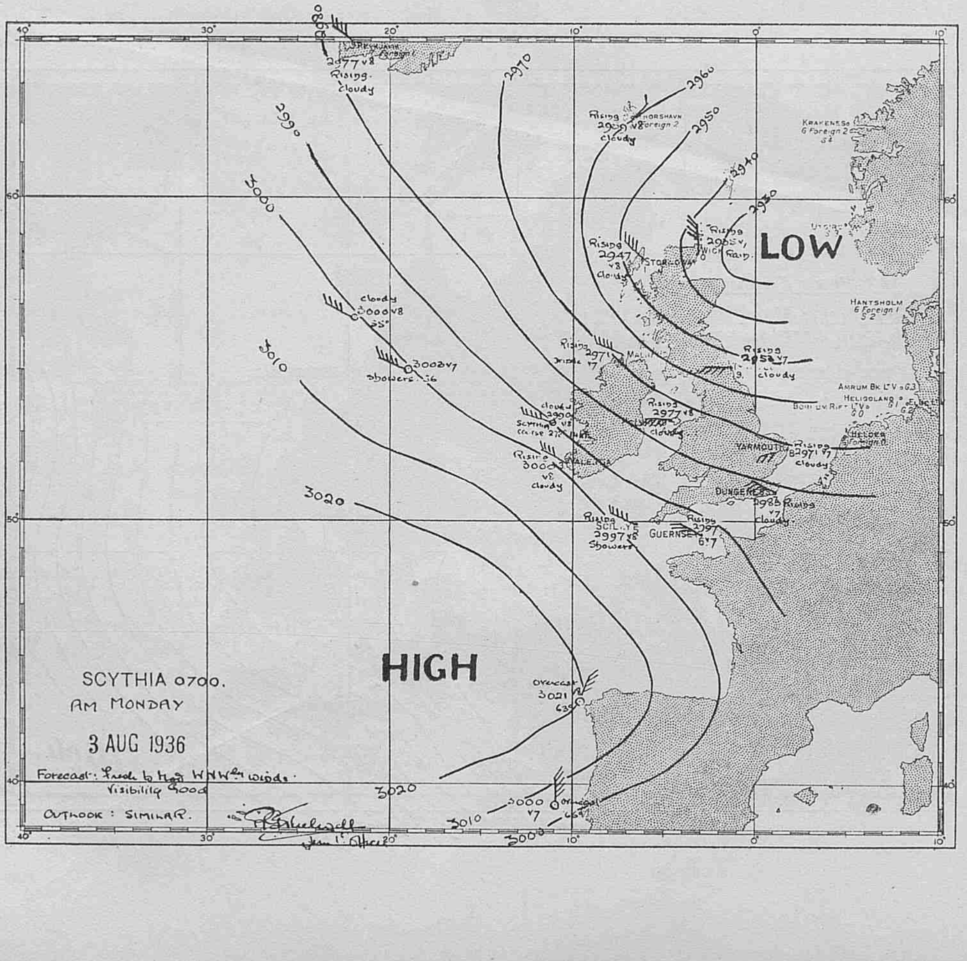
Weather Map 31st August 1936 @ 0000 G.M.T. (Ship's Time 3·12 pm 30th)

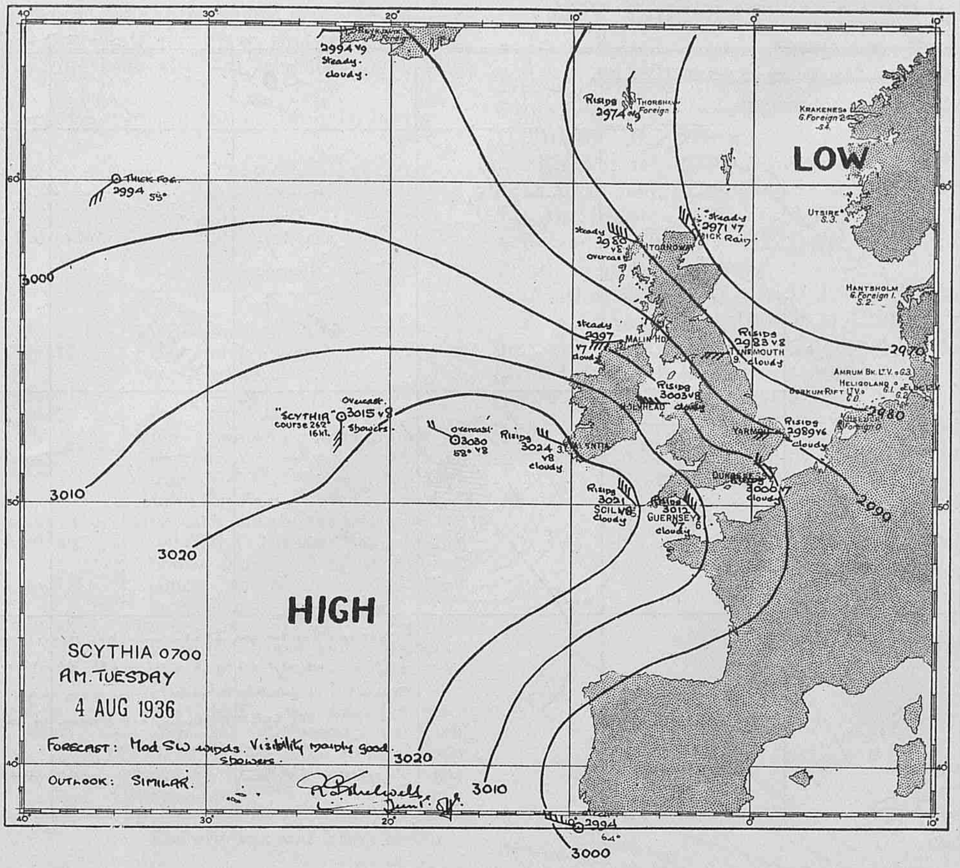

10°
20°
30°
35°
140°
130°
120°
110°
1012
1016
1012
Tuamotu or Low Archipeligo
"HOPETOR" 1013 Vis. Good "A.77"
C 1015 Vis. Good A.78° "CANADIAN CONSTRUCTOR"
"PORT FREMANTLE" Course 261° 18kt. 1011 Vis. V. Good A. 76° S. 78°
LOW
Pitcairn I
Rapa. I.
bc "TAMAROA" 1014 Vis. V. Good A. 71°
1012
1016
bc "FORDSDALE" 1021 Vis. V. Good A. 64°
1020
1020
1024
Easter I
High

GENERAL STATEMENT :- The Anticyclone centred yesterday in Latitude 34° S, Longitude 127° W has moved Eastward, and a Low pressure system appears to be approaching from the Westward.

FORECAST :- Wind will back NE to NORTH during the early hours of tomorrow morning, but weather will remain fair throughout tonight, with probable rain tomorrow.

S.S. *Scythia*. Commander G. R. Dolphin, R.D., R.N.R.
Observing Officer, Commander R. G. Thelwell, R.D., R.N.R.


40°
30°
20°
10°
0°
10°
60°
50°
40°
2980
2977 v8 Rising. cloudy
2990
2970
2960
2950
2940
2930
Rising THORSHAVN 2959 v8 Foreign 2 cloudy
KRAKENESS 6 Foreign 2 S4
Rising 2955 v, WICK Rain.
LOW
Rising 2947 v8 cloudy STORNOWAY
HANTSHOLM 6 Foreign 1 S2
3000
cloudy 3000 v8 S5
3002 v7 showers S6
3010
Rising 2971 v7 MALIN
Rising 2953 v7 cloudy
AMRUM BK. Lt V. G3
HELIGOLAND
BORKUM RIFF Lt V.
HELDER Foreign
cloudy 2990 SCYTHIA v8 course 272
Rising 2977 v8 cloudy
Rising 3000 v8 cloudy VALENTIA
YARMOUTH Rising 2971 v7 cloudy
DUNGENESS 2985 Rising v7 cloudy
3020
Rising SCILLY 2997 v8 Showers
GUERNSEY Rising 2997 6 v7
HIGH
Overcast 3021 6
SCYTHIA 0700. AM MONDAY
3 AUG 1936
Forecast: Fresh to Mod WNWly winds. Visibility Good
OUTLOOK: SIMILAR.
R G Thelwell Sen 1st Officer
3020
3000 v7 Ortegal 6
3010
3000


40°
30°
20°
10°
0°
10°
60°
50°
40°
2994 v9
Steady.
cloudy.
Thick Fog.
2994 55°
3000
3010
3020
"SCYTHIA"
course 262°
16kt.
Overcast.
3015 v8
Showers.
Overcast.
3030
58° v8
Rising
3024
v8
cloudy
Rising
2974
Thorshavn
Foreign
Krakenes
G. Foreign 2
S.4.
LOW
Utsire
S.3.
Steady
2971 v7
Wick Rain
Steady
2980
v8
overcast
Stornoway
Hantsholm
G. Foreign 1.
S.2.
Steady
2997
v7
cloudy
Malin Hd.
Rising
2983 v8
Tynemouth
9 cloudy
2970
Amrum Bk. Lt.V. G.3.
Heligoland G.1.
Borkum Rift Lt.V. C.0.
Elbe Lt.V. G.2.
2980
Rising
3003 v8
Holyhead
cloudy
Rising
2989 v6
Yarmouth
cloudy
Rising
3021
Scilly v8
cloudy
Rising
3012
Guernsey v7
cloudy
Dungeness
3006 v7
cloudy
2990
HIGH
3020
3010
2994
64°
3000

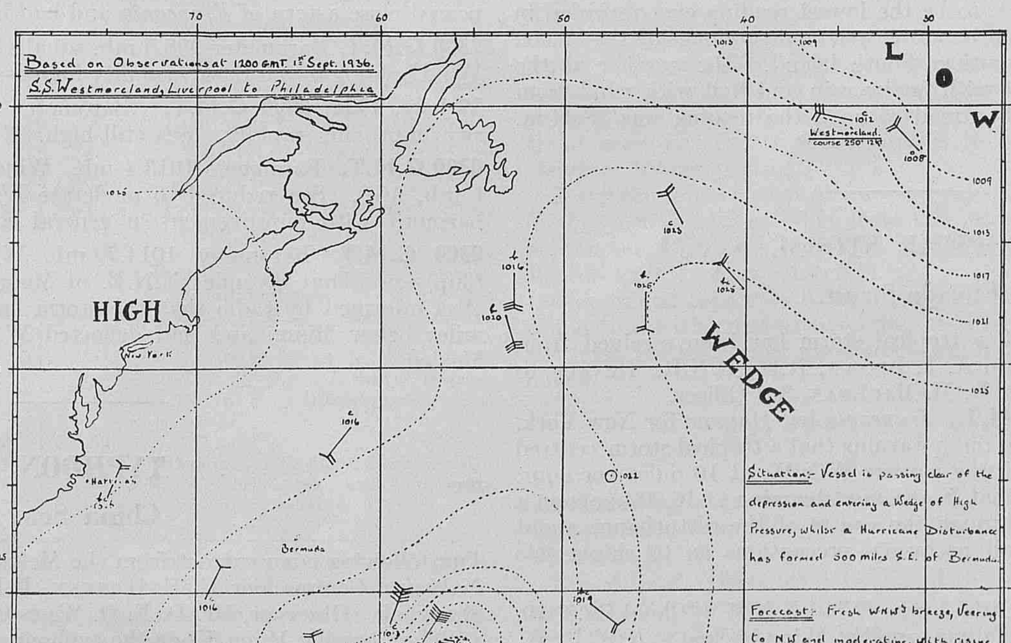
SCYTHIA 0700
AM. TUESDAY
4 AUG 1936

FORECAST: Mod SW winds. Visibility mainly good. Showers.

OUTLOOK: SIMILAR.

R. Thelwell
Lieut. Offr.

S.S. *Westmoreland*. Captain E. R. Kemp.
Observing Officer, Lieutenant C. B. Cathie, R.N.R.


70
60
50
40
30
50
40
30
20
80
1013
1009
L
O
W
1012
Westmoreland.
course 250° 12kt
1008
1009
1013
1017
1021
1025
1025
1023
1016
1026
1025
1010
HIGH
New York
WEDGE
1016
1022
Hatteras
Bermuda
1016
1017
1013
1019
1020
Hurricane
1014
Cay Lobos
1013
1017
1021
1025

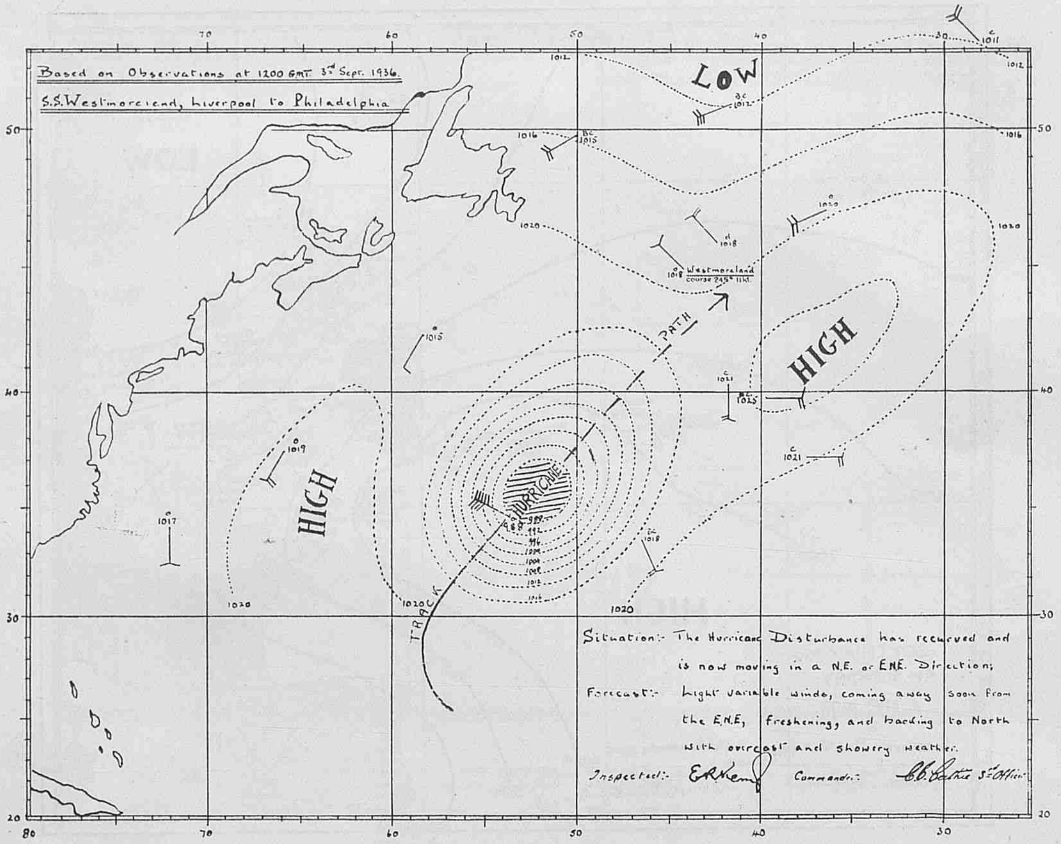
Based on Observations at 1200 GMT. 1st Sept. 1936.
S.S. Westmoreland, Liverpool to Philadelphia

Situation:- Vessel is passing clear of the depression and entering a Wedge of High Pressure, whilst a Hurricane Disturbance has formed 500 miles S.E. of Bermuda.

Forecast:- Fresh WNW'd breeze, Veering to NW and moderating, with rising barometer and clearing weather.

C. B. Cathie 3rd Officer

Inspected:- E. R. Kemp Commander.


Based on Observations at 1200 GMT 3rd Sept. 1936.

S.S. Westmoreland, Liverpool to Philadelphia

Situation:- The Hurricane Disturbance has recurved and is now moving in a N.E. or E.N.E. Direction;

Forecast:- Light variable winds, coming away soon from the E.N.E., freshening, and backing to North with overcast and showery weather.

Inspected:- E.R.Kemp Commander:- 3rd Officer

## LOW BAROMETER READING.

### Bluff, New Zealand.

The following is an extract from the Meteorological Record of S.S. *Tairoa*. Captain S. O. Oswald. Observer, Mr. W. G. Burt, 3rd Officer.

On 6th July, 1936, at 8 a.m. N.Z.S.T., the Meteorological Office (A.533) Barometer on this ship read 28.31 in. (corrected) which it is understood, on the authority of a representative of the New Zealand Meteorological Department, to be the lowest reading ever recorded in New Zealand. At the time the vessel was moored alongside the Wharf at Bluff, at the extreme south of South Island. The weather at the time was heavily overcast with heavy rain and hail with wind from the N.N.W., force 8. When read at noon the reading was 28.44 in. and at 5 p.m. 29.24 in.

## TROPICAL STORM.

### Florida Strait.

The following account of a tropical storm has been received from R.N.S. *Franconia*. Captain A. T. Brown, R.D., R.N.R., Havana to New York. Observer, Mr. D. M. MacLean, 3rd Officer.

**28th July, 1936, 1130 G.M.T.,** *Franconia* left Havana for New York. At 1500 G.M.T. we received radio warning that a tropical storm centred 110 miles E.S.E. of Miami was moving W.N.W. at 10 miles per hour. We thereupon calculated that *Franconia*, steaming at 16.00 knots on a 042° course would pass through the centre of the disturbance about 2100 G.M.T., and took all necessary precautions as to ship's side openings, awnings, etc. :

**1600 G.M.T.** Barometer 1015.5 mb. Wind N.N.W.4, Cloud Cu. 7/10, fine and clear. Barometer falling rapidly. Wind backed to N.W. by W. momentarily and then veered to N. by W.½W. The sea increased gradually and always kept about 2 points to the right of the wind in direction. Then came occasional rain squalls, increasing in frequency and intensity. Now it was decided that the ship was in the left-hand semi-circle of approaching disturbance. The later shifts of wind confirmed this.

**1900 G.M.T.** Barometer 1008.4 mb., Wind N. by W.5, Sea N'ly 5. Whole sky now chaotic in appearance representing a pall of piled up cordite smoke. Rain squalls becoming fiercer and more sudden.

**2000 G.M.T.** Wind suddenly increased to force 8, and backed to N.W. in a thick rain of great intensity. Visibility now 200 yards, ship's speed reduced as a precautionary measure.

**2240 G.M.T.** Barometer 994.8 mb., (lowest). Wind suddenly veered to East (with occasional flaws) force 9. Intense rain squalls continued with a fast rising sea. It was now estimated that the storm centre had passed close astern of *Franconia* and had headed over towards Miami.

**2300 G.M.T.** Barometer 998.5 mb. squalls taking off and sky clearing. Wind holding in the East, visibility increased to 6.

**29 July, 1936, 0000 G.M.T.** Barometer 1005.3 mb. Weather and sky improving rapidly. Sea still high.

**0300 G.M.T.** Barometer 1013.4 mb. Wind East 7, Sky now normal, Cunb. 6/10. Sea reduced to moderate E'ly and barometer rising in harmony with improvement in general conditions.

**0500 G.M.T.** Barometer 1014.7 mb. Wind E.S.E.5, Sea E'ly 3. Ship now about 80 miles N.N.E. of Miami with everything normal. Was informed by radio that the storm had hit the Florida coast 40 miles below Miami and had deflected W.S.W. towards the Gulf of Mexico.

## TYPHOON.

### China Sea.

The following is an extract from the Meteorological Record of R.M.S. *Naldera*. Commander E. F. Hannan, R.D., R.N.R., Hong Kong to Shanghai. Observer, Mr. D. E. O. Watson, 4th Officer.

Before leaving Hong Kong the typhoon signal was seen at Kowloon which reported the typhoon as being within 120 miles of Pratas Island, intensity unknown, moving north, speed unknown.

Clearing Lyemun Pass at about 1245 G.M.T. (Local Time plus 8 hours) the large "T" was seen hoisted on the mast at the entrance to this pass, this being the storm signal that a cyclone or typhoon is in the vicinity.

At 1400 G.M.T. the weather report was intercepted from D'Aguilar Radio together with a few ship's observations; up to this time weather was far from bad, light winds and blue sky—a weather chart was constructed.

Below is an extract of the Deck Log during the ensuing 16 hours.

**Thursday, 9th July, 1936.**

| Time G.M.T. | True Course. | Wind. | Barometer. | Remarks. |
|---|---|---|---|---|
| 1500 | N. 56° E. | S.E. 1 | 29·78 in. | 75 Revolutions—15 knots. |
| 1600 | N. 56° E. | S.E. 1 | 29·77 ,, | Fine cloudy weather. Slight confused swell. |
| 1700 | N. 56° E. | N.N.E. 3 | 29·74 ,, | |
| 1800 | N. 56° E. | N.N.W.3 | 29·74 ,, | |
| 1900 | N. 56° E. | N.N.E. 3 | 29·72 ,, | Ugly threatening appearance of the sky. Wind freshening from N.N.E. Typical typhoon swell felt from the S.E. |
| 2000 | N. 76° E. | N.N.E. 5 | 29·72 ,, | Overcast, occasional rain squalls. |
| 2100 | N. 65° E. | N.N.E. 5 | 29·69 ,, | 2100 G.M.T. Breaker Point Lighthouse, North 13 miles, altered course to N. 65° E. Wind increasing to Gale Force. |
| 2200 | N. 65° E. | N.N.E. 6 | 29·65 ,, | Barometer falling rapidly. Frequent heavy rain squalls. |
| 2300 | N. 65° E. | N.×E. 7 | 29·61 ,, | 2355 G.M.T. observed Lamocks High Lt. bearing N. 25° E.<br>2358 G.M.T. Slow ahead, turned ship on starboard helm to S. 63° W. to avoid running into the path of the centre of the typhoon. |
| 2400 | Turning ship. | N.E.×E. 8 | 29·54 ,, | Frequent heavy rain. High Easterly sea and heavy swell. |

**Friday, 10th July, 1936.**

| Time G.M.T. | True Course. | Wind. | Barometer. | Remarks. |
|---|---|---|---|---|
| 0100 | S. 63° W. | N.×W. 8/9 | 29·48 in. | Wind gradually backing and increasing, reaching a climax at about 0130 G.M.T. N.N.W. 11 then gradually dropping. |
| 0200 | S. 63° W. | N.W. × N. 10/11 | 29·53 ,, | 0200 G.M.T. Observed Breaker Point light bearing N. 78° W. half ahead starboard, swung ship on port helm to N. 65° E.<br>0212 G.M.T. Ship round slow ahead.<br>0230 G.M.T. Torrential rain, wind W.×N. 7, visibility nil, whistle sounded. |
| 0300 | N. 65° E. | S.W.×W.7 | 29·63 ,, | Torrential rain. |
| 0400 | N. 65° E. | West 7 | 29·61 ,, | Continuous torrential rain. Confused high swell. |
| 0500 | N. 65° E. | West 7 | 29·63 ,, | Wind backing away slowly to the S.W. with rising barometer. Occasional rain. |
| 0600 | N. 48° E. | West 7 | 29·67 ,, | 0600 G.M.T., altered course N.48° E. 0656 G.M.T. D.R. Latitude 23° 14′ N., Longitude 117° 33′ E., Sun bearing N. 73° E. Intercept 15¼ miles towards. |
| 0700 | N. 48° E. | S.W. 7 | 29·69 ,, | |
| 0800 | N. 48° E. | S.W. 7 | 29·70 ,, | Overcast and hazy, rough South-Westerly sea and moderate Westerly swell. |

For the remainder of the day wind remained South-Westerly, decreasing to a fresh breeze. Barometer steadied about midday.

This typhoon was reported as going over the land after making the coast at Amoy, where it filled up fairly rapidly. Fortunately the typhoon was not a severe one or we may have found ourselves in rather a nasty position at 0100 G.M.T. on the 10th July.

The effect of the typhoon was a strong set to the N.E. at the rate of from 2½ to 3 knots.

## SKY COLORATION NEAR TYPHOON REGION.

### Japanese Waters.

The following is an extract from the Meteorological Log of S.S. *Ixion*. Captain W. A. Turner. Miike to Shanghai. Observer, Mr. A. R. Davidson, 3rd Officer.

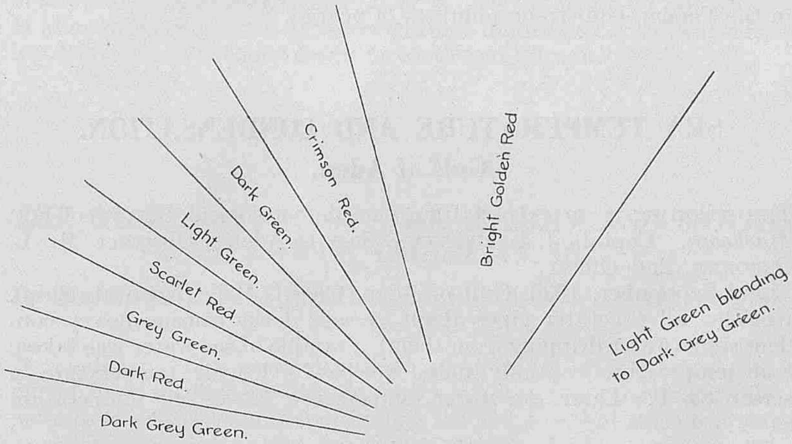
26th August, 1936, time 6.40 p.m. (1010 G.M.T.), coloured rays of light were seen at sunset, as shown in the sketch. On the following day the influence of a typhoon was felt.

Barometer 1005.7 mb. Air temperature 80°F. Wet bulb 77°F. Wind, light variable airs.

Position of Ship: Latitide 32° 25′ N., Longitude 130° 14′ E.

27th August, 1936, 1000 G.M.T. Cunb. clouds to eastward assumed a fiery red colour and Ast. indigo, while the moon shone through upper layer Cist. with a distinct green shade. Typhoon of great intensity (28.74 in.) placed at Latitude 33° 30′ N., Longitude 127° 00′ E. Barometer 1000.7 mb. Air 83°F. Wet bulb 81°F. Wind S. force 7 at ship.

Position of Ship: Latitude 31° 43′ N., Longitude 129° 28′ E.



Note.—In Marine Observer, Vol. II, 1925, page 148, an observation of rays converging to the eastern horizon about the time of sunset, made by H.M.S. *Ormonde*, off Trinidad on 19th August, 1924, was published. In a note appended on the same page it was stated that there must be an unusual number of particles suspended in the air to produce these rays. The same condition applies to the production of the fiery red sunsets which are well-known as precursors of hurricanes. Hence it is possible that the rays seen by *Ormonde* were related to the hurricane which was reported in full on page 142 of the volume above referred to.

These rays are known as crepuscular rays, or sometimes as anti-solar rays. They are often seen radiating from the western horizon at sunset, or converging to the eastern horizon at sunset, or they may be seen right across the sky. The dark spaces between the rays are cloud shadows; the rays are parallel to one another but appear to converge by perspective.

A striking observation of coloured rays, interspersed by white rays, in the east at sunset, seen from C.S. *Stephan*, off Trinidad on 20th September, 1920, was published on the back of the East Indian Seas Meteorological Chart, March, 1921.

Crepuscular rays may be seen in any latitude and may thus have no connection with tropical revolving storms, but in those of temperate latitudes the light rays are usually white, the shadows between being bluish.

## EXCEPTIONAL VISIBILITY.

### China Sea.

The following is an extract from the Meteorological Log of S.S. *Tanda*. Captain E. T. Pilcher. Hobart to Newcastle. Observer, Mr. E. J. B. Wright.

8th August, 1936, 0000 G.M.T. Dry bulb 79°, wet 78°, relative humidity 96 per cent. Observed very clearly range of mountains down west coast of Formosa. Distance, approximately, 85 miles.

The low Cu. clouds, apparently fog bank, gradually rose, until, at 0300 G.M.T. the mountains were obscured.

Approximate average height of mountains: 10,000 ft.

Height of eye of observer: 52 feet.

Position of Ship: Latitude 24° 51′ N., Longitude 119° 27′ E. (Off Ocksea Island).

## FOG.

### South-Eastern Coast of Arabia.

The following is an extract from the Meteorological Record of S.S. *British Admiral*. Captain J. H. Stockman. Abadan to Suez. Observer, Mr. J. D. Johnston.

8th September, 1936, shortly after rounding Ras al Hadd 22° 32′ N., 59° 48′ E., the air temperature dropped 10° with a fairly steady barometer and increasing monsoon conditions. At 2·00 p.m. on the same date a moderate fog set in, the air, sea and wet bulb readings being identical; this seemed most unusual, but similar conditions prevailed for the following 36 hours, there being practically no difference between the three thermometer readings, with an average reading of 70° F. At midnight on the 9th the fog began to lift off the Khorya Morya Islands (17° 30′ N. 56° E.) when general S.W. monsoon conditions were experienced again. Fog is generally experienced off Ras al Hadd at the time of the change of the monsoon, but continuity as far south as the Khorya Morya Group, is practically unheard of by people having been in the Persian Gulf trade numbers of years.

## SEA TEMPERATURE AND CONDENSATION.

### Gulf of Aden.

The following is an extract from the Meteorological Record of S.S. *Mashobra*. Captain J. L. Beatty. Suez to Aden. Observer, Mr. L. Osborne, 2nd Officer.

2nd September, 1936, Gulf of Aden, 0900 G.M.T. (Noon at Ship). Noticing all sea-water pipes about vessel's decks causing heavy condensation (water dripping from them), a sample of sea water was taken, and temperature carefully noted to be 75° F., air temperature in screen 84° F. Later, sea water temperature 70° F., air temperature 81° F.

The atmosphere was greatly cooled on account of this, and slight mist appeared, also refraction over land.

This appears to be an indication of a cold current (possibly the same as met with on occasions on the N.E. coast of Africa) coming to the surface due to shoaling water off Arabian coast, having travelled beneath the surface across the Gulf of Aden.

Position of Ship : Latitude 12° 30′ N., Longitude 43° 50′ E.

Note.—Considerable changes of sea temperature are observed in the neighbourhood of the Straits of Bab el Mandeb during the south-west monsoon season and these may be very great in the period July to September. Reports of such falls of sea temperature were published in Marine Observer, Volume VII, 1930, page 144 (S.S. *Laomedon*, in Latitude 12° 26′ N., Longitude 44° 34′ E.) and Volume VIII, 1931, page 165 (S.S. *British Dominion*, one mile south-west of Balfe Point, Perim Island). The probable explanation is that the south-west monsoon wind draws away some of the surface water of the Gulf of Aden which is replaced by cooler water from the depths. From Perim to east of Aden the water shoals gradually over a wide area to the coast and the upwelling water would pass up this slope and come to the surface in soundings.

## SHADOW OF FUNNEL ON CLOUD.

### South Pacific.

The following is an extract from the Meteorological Log of S.S. *Makura*. Captain D. MacDonald. Rarotonga to Wellington. Observer, Mr. A. J. McKenzie, 2nd Officer.

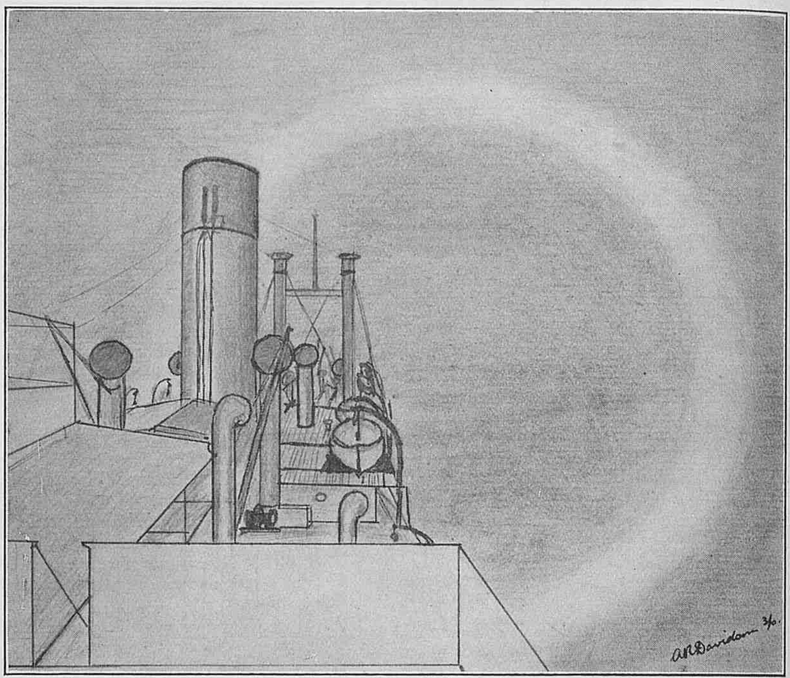
14th August, 1936. An unusual sight was observed at 8 p.m. a distinct and clear cut shadow being projected on to the low clouds by a group of bright lights situated immediately abaft the funnel. The shadow was that of the funnel and was magnified to an enormous size rising to an altitude of about 40° and reaching a breadth of about 5°. The phenomenon continued while a patch of fractostratus cloud was moving rapidly from the westward, for about half an hour. Barometer 1016·7 mb., temperatures, dry 57° F., wet 56·5° F., sea 57° F.

Position of Ship : Latitude 36° 08′ S., Longitude 176° 46′ W.

## ULLOA'S RING.

### North Pacific Ocean.

The following is an extract from the Meteorological Log of S.S. *Ixion*, Captain W. A. Turner. Vancouver to Yokohama. Observer. Mr. A. R. Davidson, 3rd Officer.


A.R.Davidson 3/o.

12th August, 1936, at 4·15 p.m., observed fog bow or Ulloa's Ring. Arc 280°, the width subtending an arc of 2½°, radius of bow 25°, altitude of sun 25° approximately. Greatest luminosity occurred on lower right hand quadrant, where orange and red colour was seen on outside edge, the remainder whitish. Thick fog prevailing at time.

Position of Ship : Latitude 47° 22′ N., Longitude 166° 34′ E.

## COLOURS OF VENUS AT SETTING.

### South African Waters.

The following is an extract from the Meteorological Log of M.V. *Chinese Prince*. Captain W. Finch. Colombo to Dakar. Observer, Mr. L. G. Taylor, 3rd Officer.

6th September, 1936, 7.20 p.m. A.T.S. Exceptional brilliancy in changing of colours by Venus in setting. From an altitude of approximately 6° until setting below the horizon, changes from red to blue to violet to green were most marked, being accentuated by the great brilliancy of the planet. On setting there was a decided "green flash."

Temperature of air, 58°F.; sea, 69°F.

Position of Ship : Latitude 33° 59′ S., Longitude 26° 52′E.

## RAINBOW BEFORE SUNRISE.

### North Alantic.

The following is an extract from the Meteorological Record of S.S. *Beaverburn*. Captain A. H. Hall. London to Montreal. Observer, Mr. A. J. Mackenzie, 4th Officer.

26th August, 1936, 0740 G.M.T. a portion of a rainbow was observed to the westward, the bow was visible from 5° altitude above the horizon, attaining a maximum of 45° altitude. These altitudes were only approximate as the horizon was obscured by rain. The peculiarity of the phenomenon was that it occurred before the time of sunrise (0503 A.T.S.), being first observed at 0451 A.T.S. and lasting until 0456 when the bow faded from sight; the bow was seen to be coloured but the colouring was faint, giving a general impression of redness.

Conditions as follows :—Wind S.E. by E. force 7. Barometer 29.73 in. falling. Cunb. 5/10; St. and Stcu. 2/10, a rain shower moving ahead of the ship, and to the eastward Cist. 3/10, very brightly coloured red by the approaching sunrise.

Position of Ship, Latitude 53° 29′ N., Longitude 41° 12′ W.

## LUNAR RAINBOW.

### South China Sea.

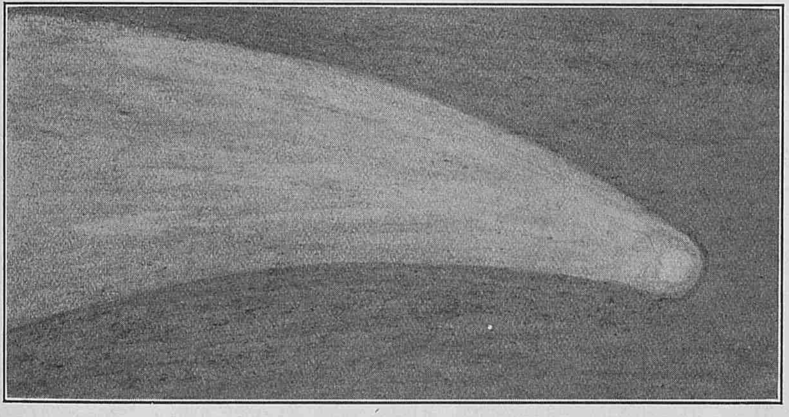
The following account of a lunar rainbow has been received from H.M.S. *Herald*, Commander N. A. C. Hardy, R.N. Observer, Lieut. R. H. Connell, R.N.

At 2125 G.M.T. on the 6th of July, 1936, ship in Latitude 3° 32′ N., Longitude 106° 07′ E., a lunar rainbow was observed. Moon three days after full, bearing 101°, altitude 9°. Rainbow bearing 244°–321°, altitude of apex 30°.

The colours were difficult to distinguish, but the general effect was of a narrow band of silvery white, tinged with brownish orange on the convex side. The rainbow was complete, and was visible for seven minutes, gradually fading from the apex towards the horizon. A nimbus cloud accompanied by slight rain, had passed over the ship at 2100 G.M.T., and rain was visible near the rainbow.

## PELTIER'S COMET (1936a).

Interesting accounts have been received from thirteen ships describing the appearance and position of Peltier's Comet on its passage through the southern heavens between 6th and 19th August, 1936. Space will not permit the publication of these accounts in full but a short summary of them is given below, together with a drawing made by Mr. R. E. Garner, 3rd Officer of S.S. *Port Bowen,* Captain A. H. Brown.



The ships and the regions in which the observations were made are given in the accompanying table :—

| Ship. | Ocean. | Route. |
|---|---|---|
| *Ariguani* ... | N. Atlantic Ocean ... | West Indies to U.K. |
| *Arlanza* ... | S. Atlantic Ocean ... | U.K. to River Plate. |
| *Athlone Castle*... | S. Atlantic Ocean ... | U.K. to Cape Town. |
| *City of Tokio* ... | Arabian Sea ... ... | Colombo to U.K. |
| *Erin* ... ... | Caribbean Sea ... ... | U.K. to Honduras. |
| *Inanda* ... | N. Atlantic Ocean ... | U.K. to Demerara. |
| *Mahronda* ... | Red Sea and N. Indian Ocean. | U.K. to Colombo. |
| *Maron* ... | N. Atlantic Ocean ... | New York, Batavia, via. C.G.H. |
| *Port Bowen* ... | S. Pacific Ocean ... | New Zealand to U.K., via Cape Horn. |
| *Port Denison* ... | N. and S. Atlantic Ocean | New Zealand to U.K., via Cape Horn. |
| *San Alvaro* ... | Gulf of Mexico ... | U.K. to Puerto Mexico. |
| *Tairoa* ... | S. Pacific Ocean ... | New Zealand to U.K., via Cape Horn. |
| *Titan* ... ... | Indian Ocean and China Sea. | U.K. to Saigon, via Beira. |

The comet was discovered as a faint telescopic object by Mr. Peltier, at Ohio on 16th May, 1936. It subsequently attained naked-eye visibility and was seen in England and other northern countries until early in August after which moonlight and increasing south declination rendered it invisible. It was then about magnitude 3½.

The ships' observations show how it pursued its track through the southern constellations, passing very close to the star α Pavonis on 13th August. Its brightness was given by *Mahronda* and *City of Tokio* as magnitude 2½ on 7th August and by the *City of Tokio* on 8th August as 2½, though in some ships it was estimated as magnitude 3, or rather less, at this time. Subsequently it began to diminish in brilliancy and *Port Denison* on 10th August and *Tairoa* on 11th August estimated it as magnitude 4. On 12th August *Mahronda* stated that the comet was much weaker and after 13th August all ships stated that it was fainter and smaller and only visible through binoculars. The last observation was that of *Port Bowen* on 19th August, when the comet was seen only as a faint streak after searching with night glasses. The tail had been observed as about 3° long in England, but the ships' observations state that it was about 5° long from 6th to 8th August. It afterwards decreased, as the brightness diminished with the increasing distance of the comet from the earth and the sun.

## THE OBSERVATION OF THE HEIGHT AND MOTION OF LOWER CLOUD AT SEA.

By Mr. J. K. Crone, 2nd Officer, S.S. *Mooltan.* Captain F. E. French, R.N.R.

If the distance of a particular cloud is known, its height can be determined by observing its altitude with a sextant. A rangefinder offers perhaps the easiest method of finding the distance, but since comparatively few merchant ships are equipped with these instruments, the following method has been devised.

A "Table of Dip Excess" is given on p. 100, and by means of this the distance of an object can be determined by measuring the angle between its waterline and the horizon above it. Thus, the distance from the observer of a shadow on the water can be determined.

Accordingly, if a suitable cloud is chosen which is about to pass between the observer and the sun, its height is found by observing, at the instant of its passing, the angle between the shadow and the horizon above it, its altitude, and the altitude of the sun. The calculation, with an explanatory diagram, Figure 1, is given below.

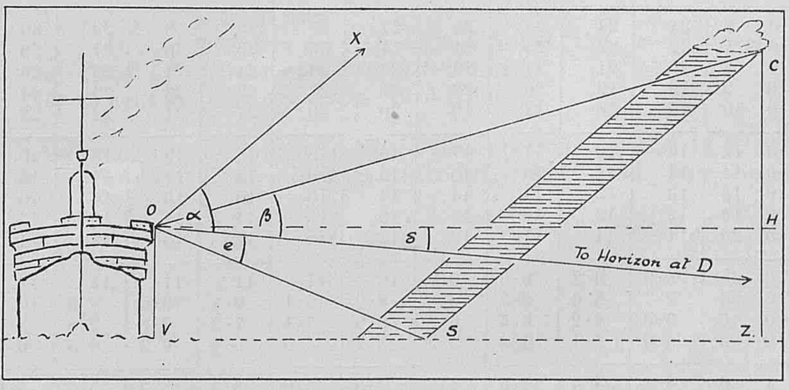


Figure 1.

Some care must be exercised in choosing suitable conditions for observation. The sun should be on a bearing approximately at right angles to the apparent direction of motion of the clouds; a cloud should be chosen which will have an altitude about half that of the sun, when passing between the latter and the ship, and whose shadow will pass at a suitable distance from the ship.

Having determined, by more than one set of observations, the average altitude of the clouds, their direction of travel and speed can be found in the following way.

Watch the bearing of a particular piece of cloud. If it does not change, and the cloud eventually passes directly over the ship, this bearing is the apparent direction from which the cloud is travelling.

Take the bearing at right angles to this direction, preferably away from the sun, choose a cloud of suitable altitude and size, note the time it is, say, 20 degrees in azimuth from the bearing, again when it is, say, 10 degrees from it, and again when on this bearing. Immediately afterwards, observe the altitude of the cloud. From these observations, the apparent speed is determined, as shown in the second calculation and FIGURE 2.

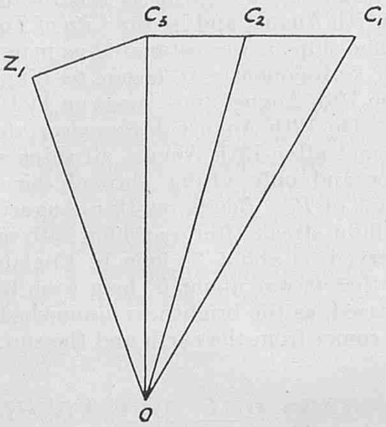


Figure 2.

Thereafter, the calculation of the true speed and direction of travel of the cloud is merely one of those relative motion problems with which we become familiar, when preparing for Board of Trade examinations.

The method is laborious, and its application limited; and, so far, no comparison has been made of results obtained by it with those by any other more accurate method. Some of the values already obtained are given below.

It may be added that the Table of Dip Excess can be used in the open sea for finding the distance off objects such as buoys, breaking reefs, ships or the extremity of an island. Its scope depends primarily on the height of the observer, and care should be taken that any result is not assumed to be more accurate than the conditions of observation warrant. It need hardly be stressed that, to obtain a result of any use, the true horizon must be visible above the object.

## OBSERVATIONS.

2nd Nov., 1934. Pos. 14° 06′ S. 97° 54′ E.
Weather. Wind S.E. 4. Pressure 1013 mbs. falling slowly. Air 78°. Clouds Cu. 3/10.
0820 G.M.T. Height of Base of Lower Cloud 2100-2400 feet.

1st March, 1935. Pos. 15° 05′ N. 73° 40′ E.
Weather. Wind N.W. 3. Pressure 1011 mbs. falling. Air 79°. Clouds Frcu. Stcu. 8/10 Ci. Trace.
0950 G.M.T. Height of Base of Lower Cloud 2200-2350 feet.

2nd March, 1935. Pos. 09° 08′ N. 76° 18′ E.
Weather. Wind N. by W. 4. Pressure 1009 mbs. Air 84°. Cloud Frcu. Stcu. 1/10. Cloud apparently dissolving.
0915 G.M.T. Height of Base of Lower Cloud 2300-2400 feet. Moving from N.W. at Speed of 19 Knots.

29th Oct. 1936. Pos. 16° 26′ S. 99° 04′ E.
Weather. Wind E.S.E. 3. Air 73°. Cloud Det. Cu. 2/10.
2120 G.M.T. (Observations taken by moonlight). Height of Base of Lower Cloud 2400 feet. Moving from E.S.E. at Speed of 12 Knots.

## TABLE OF DIP EXCESS.

| Obsd. Angle. | | Height of Observer's Eye in Feet. | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | ′ | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 |
| 0 | 2 | 40 | 40 | 40 | 40 | 45 | 45 | 45 | 45 | 45 | 50 | 50 | 50 | 50 | 50 | 55 | 55 | 55 | 55 | 55 | 55 | 60 |
| 0 | 3 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 40 | 40 | 40 | 40 | 45 | 45 | 45 | 45 | 45 | 45 | 50 | 50 | 50 | 50 |
| 0 | 4 | 29 | 30 | 31 | 32 | 33 | 33 | 34 | 35 | 36 | 37 | 37 | 38 | 39 | 40 | 40 | 41 | 42 | 42 | 43 | 44 | 45 |
| 0 | 5 | 26 | 27 | 28 | 28 | 29 | 30 | 31 | 31 | 32 | 33 | 33 | 34 | 35 | 36 | 36 | 37 | 38 | 38 | 39 | 40 | 40 |
| 0 | 6 | 24 | 24 | 25 | 26 | 27 | 27 | 28 | 28 | 29 | 30 | 31 | 31 | 32 | 32 | 33 | 34 | 34 | 35 | 36 | 36 | 37 |
| 0 | 7 | 22 | 22 | 23 | 24 | 24 | 25 | 26 | 26 | 27 | 28 | 28 | 29 | 30 | 31 | 31 | 32 | 32 | 33 | 34 | 34 | 34 |
| 0 | 8 | 20 | 21 | 21 | 22 | 22 | 23 | 24 | 24 | 25 | 25 | 26 | 27 | 27 | 28 | 29 | 29 | 30 | 30 | 31 | 31 | 32 |
| 0 | 9 | 19 | 19 | 20 | 20 | 21 | 22 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 26 | 27 | 27 | 28 | 28 | 29 | 29 | 30 |
| 0 | 10 | 17 | 18 | 18 | 19 | 20 | 20 | 21 | 21 | 22 | 22 | 23 | 23 | 24 | 24 | 25 | 26 | 26 | 27 | 27 | 28 | 28 |
| 0 | 12 | 16 | 16 | 17 | 17 | 18 | 18 | 18 | 19 | 19 | 20 | 21 | 21 | 22 | 22 | 22 | 23 | 23 | 24 | 24 | 25 | 25 |
| 0 | 14 | 14 | 14 | 15 | 15 | 16 | 16 | 17 | 17 | 17 | 18 | 18 | 19 | 19 | 20 | 20 | 20 | 21 | 21 | 22 | 22 | 23 |
| 0 | 16 | 13 | 13 | 13 | 14 | 14 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 18 | 18 | 18 | 19 | 19 | 20 | 20 | 21 | 21 |
| 0 | 18 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | 14 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 17 | 18 | 18 | 18 | 19 | 19 |
| 0 | 20 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 14 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 17 |
| 0 | 25 | 8·9 | 9·2 | 9·6 | 9·9 | 10 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | 14 | 14 | 15 | 15 | 15 |
| 0 | 30 | 7·7 | 8·0 | 8·3 | 8·6 | 8·9 | 9·1 | 9·4 | 9·6 | 9·9 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 13 | 13 | 13 |
| 0 | 40 | 6·0 | 6·2 | 6·5 | 6·7 | 6·9 | 7·1 | 7·3 | 7·6 | 7·8 | 8·0 | 8·2 | 8·4 | 8·6 | 8·8 | 9·1 | 9·3 | 9·5 | 9·7 | 9·9 | 10 | 10 |
| 0 | 50 | 5·0 | 5·1 | 5·3 | 5·5 | 5·7 | 5·9 | 6·1 | 6·3 | 6·5 | 6·7 | 6·9 | 7·0 | 7·2 | 7·3 | 7·5 | 7·7 | 7·9 | 8·1 | 8·3 | 8·5 | 8·7 |
| 1 | 0 | 4·2 | 4·4 | 4·5 | 4·7 | 4·8 | 5·0 | 5·2 | 5·3 | 5·5 | 5·6 | 5·8 | 5·9 | 6·1 | 6·2 | 6·4 | 6·5 | 6·7 | 6·8 | 7·0 | 7·1 | 7·3 |
| 1 | 15 | 3·4 | 3·6 | 3·7 | 3·9 | 4·0 | 4·1 | 4·2 | 4·4 | 4·5 | 4·6 | 4·8 | 4·9 | 5·0 | 5·1 | 5·3 | 5·4 | 5·5 | 5·7 | 5·8 | 5·9 | 6·1 |
| 1 | 30 | 2·9 | 3·0 | 3·2 | 3·3 | 3·4 | 3·5 | 3·6 | 3·7 | 3·8 | 3·9 | 4·0 | 4·1 | 4·2 | 4·4 | 4·5 | 4·6 | 4·7 | 4·8 | 4·9 | 5·1 | 5·2 |
| 1 | 45 | 2·5 | 2·6 | 2·7 | 2·8 | 2·9 | 3·0 | 3·1 | 3·2 | 3·3 | 3·4 | 3·5 | 3·6 | 3·7 | 3·8 | 3·9 | 4·0 | 4·1 | 4·2 | 4·3 | 4·4 | 4·5 |
| 2 | 0 | 2·2 | 2·3 | 2·4 | 2·5 | 2·6 | 2·7 | 2·7 | 2·8 | 2·9 | 3·0 | 3·1 | 3·2 | 3·3 | 3·3 | 3·4 | 3·5 | 3·6 | 3·7 | 3·8 | 3·8 | 3·9 |
| 2 | 30 | 1·8 | 1·9 | 1·9 | 2·0 | 2·1 | 2·1 | 2·2 | 2·3 | 2·4 | 2·4 | 2·5 | 2·6 | 2·6 | 2·7 | 2·8 | 2·8 | 2·9 | 3·0 | 3·1 | 3·1 | 3·2 |
| 3 | 0 | 1·5 | 1·6 | 1·6 | 1·7 | 1·7 | 1·8 | 1·9 | 1·9 | 2·0 | 2·0 | 2·1 | 2·2 | 2·2 | 2·3 | 2·3 | 2·4 | 2·4 | 2·5 | 2·6 | 2·6 | 2·7 |
| 4 | 0 | 1·1 | 1·2 | 1·2 | 1·3 | 1·3 | 1·4 | 1·4 | 1·4 | 1·5 | 1·5 | 1·6 | 1·6 | 1·7 | 1·7 | 1·8 | 1·8 | 1·9 | 1·9 | 1·9 | 2·0 | 2·0 |
| 6 | 0 | 0·8 | 0·8 | 0·8 | 0·9 | 0·9 | 0·9 | 0·9 | 1·0 | 1·0 | 1·0 | 1·1 | 1·1 | 1·1 | 1·2 | 1·2 | 1·2 | 1·2 | 1·3 | 1·3 | 1·3 | 1·4 |

The Distance from an object can be found by observing the sextant angle between the waterline of the object and the horizon above it. Correct the observed angle for Index Error, and with this and the height of the observer's eye above Sea Level, enter the Table. The figure corresponding to the two values is the Distance expressed in cables.

## CALCULATION OF HEIGHT.

In FIGURE 1, an observer at O measures the following angles :—

(i) $D\hat{O}S$, the angle of Dip Excess of the Cloud shadow (further edge). Call this $e$.

(ii) $X\hat{O}D$, the observed altitude of the Sun or Moon. Call this $\alpha$.

(iii) $C\hat{O}D$, the observed altitude of the lower edge of the Cloud. Call this $\beta$.

From the Table of Dip Excess, with argument $D\hat{O}S$, the Dip Excess, and OV, the height in feet of the observer, VS, the distance of the further edge of the cloud shadow, is found.

Then in the triangle OSC,

OS is assumed equal to VS,

$C\hat{O}S$ is equal to $C\hat{O}D$ plus $D\hat{O}S$, $(\beta + e)$

$S\hat{C}O$ is equal to $X\hat{O}C$, $(\alpha - \beta)$,

$$\text{CS is equal to OS}.\frac{\sin.(\beta + e).}{\sin.(\alpha - \beta)}$$

Call the Angle $H\hat{O}D$, the Dip of the Sea Horizon, $\delta$.

Then in the triangle CSZ,

$$\text{CS is equal to OS}.\frac{\sin.(\beta + e)}{\sin.(\alpha - \beta)}$$

$C\hat{S}Z$ is equal to $(\alpha - \delta)$.

CZ is equal to CS . sin . $C\hat{S}Z$

$$\text{which is equal to OS}.\frac{\sin.(\beta + e)\sin.(\alpha - \delta).}{\sin.(\alpha - \beta)}$$

Therefore, height in feet of Lower Edge of Cloud is equal to

$$608.\text{OS}.\frac{\sin.(\beta + e).\sin.(\alpha - \delta)}{\sin.(\alpha - \beta)}$$

### WORKED EXAMPLE.

10th Jan., 1937. Position. 24° 59′ S. 108° 05′ E.

Weather. Wind, SSE.5. Pressure, 1009 Mbs. Air, 73°.
Cloud, Det. Cu. & Frcu. 1/10.

Height of Observer's Eye, OV = 72 feet.

Ship's Course, 137°. Speed, 15·2 knots.

(1) 0920 G.M.T.

$\delta = 0°\,08'$  $e = 0°\,42'$  OS = VS = 8·1 cbls.

$\alpha = 32°\,00'$  $\beta = 16°\,30'$  $(\alpha - \beta) = 15°\,30'$

$(\alpha - \delta) = 31°\,52'$  $(\beta + e) = 17°\,12'$

$$\text{CZ} = 608 \times 8{\cdot}1 \times \frac{\sin.(17°\,12') \times \sin.(31°\,52')}{\sin.(15°\,30')}$$

CZ = 2880 feet.

(2) 0927 G.M.T.

$\delta = 0°\,08'$  $e = 0°\,45\tfrac{1}{2}'$  OS = VS = 7·6 cbls.

$\alpha = 30°\,30'$  $\beta = 17°\,30'$  $(\alpha - \beta) = 13°\,00'$

$(\alpha - \delta) = 30°\,22'$  $(\beta + e) = 18°\,15\tfrac{1}{2}'$

$$\text{CZ} = 608 \times 7{\cdot}6 \times \frac{\sin.(18°\,15\tfrac{1}{2}') \times \sin.(30°\,22')}{\sin.(13°\,00')}$$

CZ = 3250 feet.

---

Observed Apparent Direction from which Lower Cloud travelled 147° True.

## CALCULATION OF APPARENT SPEED.

In FIGURE 2,

$Z_1C_3$ = CZ — height of Observer = CZ — VO, in Figure 1.

$C_3\hat{O}Z_1$ = Observed altitude of Cloud (corrected for Dip and Index Error).

$O\hat{Z}_1C_3$ = a right angle.

Therefore

$$C_3O = \frac{Z_1C_3}{\sin.C_3\hat{O}Z_1} = \frac{\text{CZ} - \text{VO}}{\sin.C_3\hat{O}Z_1}.$$

In the triangle $C_1C_3O$,

$$C_3O = \frac{\text{CZ} - \text{VO}}{\sin.C_3\hat{O}Z_1}$$

$C_3\hat{O}C_1$ = the apparent change of Azimuth between first and third times,

$C_1\hat{C}_3O$ = a right angle,

$C_1C_3$, the apparent distance travelled between first and third times

$$= C_3O.\tan.C_3\hat{O}C_1 = \frac{(\text{CZ} - \text{VO}).\tan.C_3\hat{O}C_1}{\sin.C_3\hat{O}Z_1}.$$

Similarly, in triangle $C_2C_3O$,

$C_3\hat{O}C_2$ = the apparent change of Azimuth between second and third times,

$C_2C_3$, the apparent distance travelled between second and third times

$$= \frac{(\text{CZ} - \text{VO}).\tan.C_3\hat{O}C_2}{\sin.C_3\hat{O}Z_1}.$$

Then $C_1C_2 = C_1C_3 - C_2C_3$.

| | Ship's Time | True Bearing. | Obs. Alt. |
|---|---|---|---|
| (1) | 17.07.55 | 075° | |
| | 17.08.45 | 066° | |
| | 17.09.35 | 057° | 8° 20′ |

Assuming CZ = 2880 feet,

$$C_1C_3 = \frac{(\text{CZ} - \text{VO}).\tan.C_3\hat{O}C_1}{\sin.C_3\hat{O}Z_1} = \frac{2808\tan.18°}{\sin.8°\,20'} = 6300\text{ feet.}$$

$$(a)\quad C_2C_3 = \frac{2808\tan.9°}{\sin.8°\,20'} = 3070\text{ feet.}$$

$$(a)\ \text{Cloud's Apparent Speed} = \frac{3070 \times 60 \times 60}{6080 \times 50} = 36{\cdot}4\text{ Knots.}$$

(b) $C_1C_2 = C_1C_3 - C_2C_3$ = 3230 feet.

$$(b)\ \text{Cloud's Apparent Speed} = \frac{3230 \times 60 \times 60}{6080 \times 50} = 38{\cdot}2\text{ Knots.}$$

| | Ship's Time | True Bearing | Obs. Alt. |
|---|---|---|---|
| (2) | 17.13.25 | 077° | |
| | 17.14.00 | 067° | |
| | 17.14.35 | 057° | 12° 30′ |

Assuming CZ = 3250 feet,

$C_1C_3$ = 5340 feet (a) $C_2C_3$ = 2590 feet (b) $C_1C_2$ = 2750 feet.

(a) Cloud's Apparent Speed = 43·8 Knots.

(b) Cloud's Apparent Speed = 46·5 Knots.

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Assuming Cloud's Apparent Speed to lie between 36 and 47 Knots, True Direction from which it travelled = 153°, and True Speed = 22 — 32 Knots.

# VANCOUVER.

By Commander J. Hennessy, R.D., R.N.R.

Amongst the names of those great eighteenth century explorers and Empire builders that of Captain George Vancouver, R.N., is perhaps the least familiar.

The great work performed by Vancouver on his voyage of discovery to the North Pacific Ocean and round the world during the years 1791–95 became somewhat obscure and forgotten, preceded as it was by the world-famed voyages of Captain Cook and followed by the Napoleonic wars and consequent unrest throughout Europe. Thus the work of this great scientific navigator, explorer and hydrographer carried out in small ships under circumstances of the greatest hardship, was never given the prominence attained by that of other great navigators of the period.

George Vancouver was born on the 22nd day of June, 1757, in King's Lynn, Norfolk. He was the youngest of the five children of John Jasper Vancouver, a gentleman of Dutch descent, who at the time of George's birth held the responsible position of Deputy Collector of Customs at that ancient port.

Little is known of Vancouver's early boyhood. His mother died when he was eleven years of age and it is believed that he, in company with his three brothers, was educated at Lynn Grammar School. King's Lynn was at this time one of the chief and most flourishing ports in England, and nearly all the inhabitants of the town were engaged in one way or another in the shipping business. Young Vancouver was therefore brought into close association with ships and seamen from his earliest days and this no doubt had some influence on his adopting the sea as a profession.

Interest in the supposed existence of a far southern continent having been again revived through the publication of "Dalrymple's Voyages," the Royal Society in 1772 succeeded in persuading the Earl of Sandwich, First Lord of the Admiralty, to despatch an expedition to search for this new land.

The command of the expedition was offered to Dalrymple and on his refusing to accept it, Captain Cook, who had but lately returned from the first of his three famous voyages of discovery, undertook the commission and set about fitting out and equipping two Whitby-built colliers which he chose for the work. They were the *Resolution* of 462 tons burden, commanded by Cook himself, and her consort the *Adventure* of 336 tons burden, commanded by Captain Tobias Furneaux.

The ships sailed from Plymouth Sound on the 13th of July, 1772, and on board the *Resolution* George Vancouver, then 15 years of age, was making his first voyage. He was rated as an able-bodied seaman, as was sometimes the case in those days for boys who entered the Royal Navy with the intention of later receiving commissions. The rating was purely nominal, such lads acted as subordinate officers and were always referred to as the "Young Gentlemen." During his first voyage under Cook, which occupied three years sixteen days, and is still regarded as one of the greatest achievements of navigation, Vancouver had assisted in the survey and charting of several newly-found islands in the Pacific Ocean. He had visited New Zealand and traversed the southern ocean in all directions and in circumnavigating the globe in or near the Antarctic Circle had penetrated to 71° 10′ S., a latitude not again reached until Sir James Ross discovered what is now known as Antarctica, 67 years later. It is recorded that as the ship was going about young Vancouver scampered out to the end of the jib-boom and thereafter claimed to have approached nearer to the South Pole than any other man.

Not only was the young sailor fortunate in serving his apprenticeship under such an intrepid commander as Cook, but the *Resolution* also had on board a learned astronomer and brilliant mathematician named William Wales, representing the Board of Longitude, who later became master of Christ's Hospital Mathematical School. Wales took a keen interest in the lad's studies and it is owing to his teaching that much of Vancouver's future success was due.

In the account of his great voyage Vancouver acknowledges his debt of gratitude to him as follows :—

> "The west point of Observatory Inlet I distinguished by calling it Point Wales after my much esteemed friend Mr. Wales of Christ's Hospital, to whose kind instruction, in the early part of my life, I am indebted for that information which has enabled me to traverse and delineate these lonely regions."

*Resolution* arrived at Spithead on the 30th July, 1775. Vancouver had just passed his eighteenth birthday and with only three years' sea service behind him could boast of greater experiences than fell to the lot of most seasoned seamen even in those days. He returned to his home to find that his father had passed away two years previously, and that by his father's wish he had been placed under the guardianship of a cousin of his mother, one John Davis, Lord of the Manor of Walington, until he should attain the age of 21.

The existence of a rich and fertile continent in high southern latitudes having been disproved by Cook's second voyage, attention was now centred on the location of a navigable channel known as the North-West Passage, which was believed to connect the North Atlantic and Pacific Ocean and for the finding of which the Government offered a reward of £20,000.

Several unsuccessful attempts had been made to find the entrance from the Atlantic side, so the Admiralty decided to equip an expedition and if possible make the passage, starting from the Pacific.

Captain Cook was given command of the expedition and recommissioned his old ship the *Resolution* for the purpose and for consort chose the *Discovery*, a Whitby-built collier of 300 tons burden, which was placed under the command of Captain Charles Clerke who had served as a lieutenant in the *Resolution* on her previous voyage. George Vancouver was appointed to the *Discovery* as a midshipman.

*Resolution* sailed from Plymouth on 12th July, 1776 and on arrival at the Cape waited for *Discovery*, whose sailing had been delayed. On leaving the Cape the ships sailed eastward to Van Diemen's Land, sighting and naming Prince Edward and Marion Islands and surveying Kerguelen Island en route. Repairs were carried out in Adventure Bay, Van Diemen's Land, whence they proceeded to New Zealand. Bidding farewell to New Zealand, exploration of several islands in the South Pacific was carried out and a stay made at Tahiti.

On crossing the equator, Christmas Island and some of the islands of the Sandwich group were discovered before setting course for Nootka, on the New Albion Coast, where they arrived on the 24th April, 1778. Leaving Nootka the ships sailed northward exploring all likely inlets in quest of the North-West Passage. When north of Behring Strait and held up by impregnable ice in Latitude 70° 41′ N. Cook turned back, and after carrying out some detailed surveys on the coast of Alaska, set sail for the Sandwich group, where he discovered and named Owhyhee Island. Here the great tragedy of Cook's death took place on 14th February, 1779. Command of the expedition now descended on Captain Clerke, and the ships commenced their homeward voyage by way of China, the Indian Ocean and the Cape of Good Hope. Captain Clerke, who had been in failing health for some time, died less than two months before the ships arrived home on 4th October, 1780, after a voyage of four and a quarter years' duration.

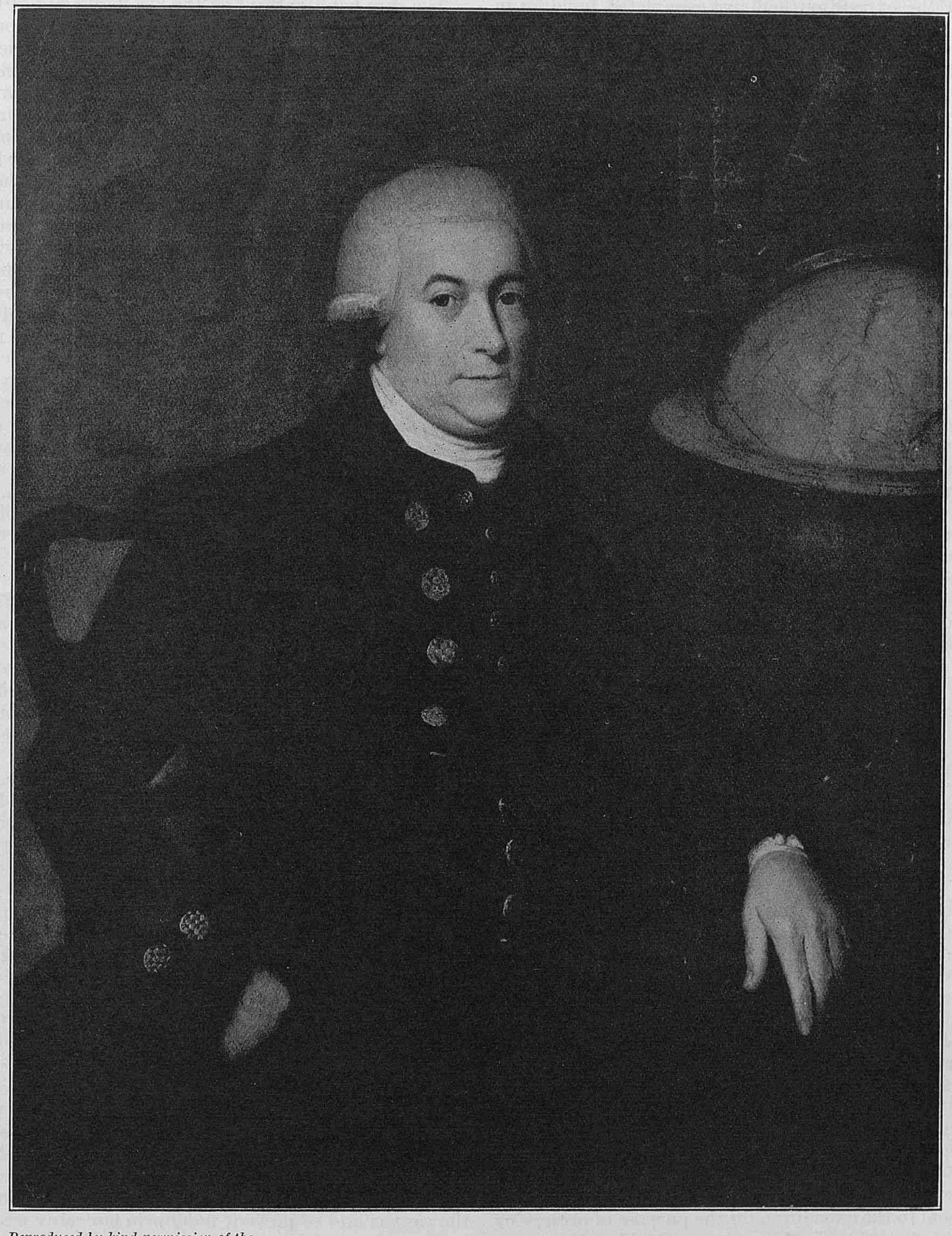
In the same month as his return home Vancouver passed his examination as lieutenant. He had now been eight years at sea and had obtained experience in seamanship, navigation, exploration and surveying which could only be gained under such a master as Cook. He had as yet, however, little experience in the purely military duties of a naval officer, but this was to come during his next ten years' service.

At this time England was passing through a critical period in her history; the American colonies were fighting for their independence and France, Spain and Holland were allied against her.

On the 9th December, 1780, Vancouver was appointed as a lieutenant to the sloop *Martin*, a sixth rate, but was soon afterwards reappointed to the *Fame*, a ship of the line. In 1782 the *Fame* was one of Rodney's fleet which met and defeated the French off St. Lucia, capturing the French admiral and seven of the enemy ships. This action enabled England to recover her lost West India islands and ended the menace of the French and Spanish alliance which was threatening the break up of the British Empire.

In 1783 the *Fame* returned to England and next year Vancouver was appointed to the *Europa*, a fourth rate, in which ship he again served on the West India station under Commodore Gardner. In 1789 he returned in the *Europa* to England, when the ship was paid off.

The Government had decided to send an exploring expedition under the command of Captain Henry Roberts to the South Seas. On the strong recommendation of Commodore Gardner, for whom he had carried out detailed surveys in the West Indies, Vancouver was selected as second-in-command. This appointment under Captain Roberts was very welcome to Vancouver. He writes :—" In this



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Captain George Vancouver, R.N.

proposal I acquiesced, and found myself very pleasantly situated in being thus connected with a fellow traveller for whose abilities I bore the greatest respect, and in whose friendship and good opinion I was proud to possess a place. And as we had sailed together with Captain COOK on his voyage towards the south pole, and as both had afterwards accompanied him with Captain CLERKE in the *Discovery* during his last voyage, I had no doubt that we were engaged in an expedition which would prove no less interesting to my friend than agreeable to my wishes."

The ship chosen for the expedition had just completed building in the Thames. On launching she was named *Discovery* and immediately prepared for the voyage under the superintendence of VANCOUVER. On the 1st January, 1790 she was commissioned by Captain ROBERTS and towards the end of April was in readiness to proceed to sea when the possibility of a fresh outbreak of hostilities against Spain caused the expedition to be abandoned.

The Spaniards had molested and seized British trading vessels on the north-west coast of America together with British factories ashore at Nootka Sound on the allegation that the coast and adjacent seas belonged to Spain and that any foreign ships trading there were guilty of piracy and smuggling. The British Government demanded immediate satisfaction and on this not being forthcoming a large fleet known as the Spanish Armament, which VANCOUVER describes as one of the noblest fleets that Great Britain ever saw, was mobilised and placed under the command of Lord HOWE. VANCOUVER was appointed to the *Courageux* under his old commander Sir ALAN GARDNER.

War between the two countries was, however, averted by the Spaniards agreeing to restore the disputed property in Nootka Sound and to make reparation for the seizure of British ships and imprisonment of her subjects. Spain also agreed to abandon her claim to the sovereign rights to that part of the country and adjacent seas situated north of the 30th parallel.

On the 17th November, VANCOUVER was ordered to report at the Board of Admiralty where he was informed that he had been chosen to command an expedition which was to proceed to Nootka and receive back formally the territories which the Spaniards had seized. Further, on account of the importance to this country of the North American fisheries and fur trade to China, the coast, northward from the 30th parallel, was to be accurately surveyed and all possible information collected regarding the natural and political state of the country.

VANCOUVER again set about preparing the *Discovery* for the expedition and the armed tender *Chatham* was selected for consort and placed under the command of Lieutenant W. R. BROUGHTON. They were both small vessels. *Discovery* was of 340 tons, copper fastened, sheathed with plank and coppered over. She mounted ten four-pounders and ten swivels and carried a total complement of 100 souls. The *Chatham* was of only 135 tons, sheathed with copper, and mounted four three-pounders and six swivels. Her total crew consisted of 45 hands. VANCOUVER was permitted to name his own officers for appointment and chose those who had previously been shipmates with him under the command of Sir ALAN GARDNER. He refers to his officers as follows :—" It was with infinite satisfaction that I saw amongst the officers and young gentlemen of the quarterdeck some who with little instruction, would soon be enabled to construct charts, take plans of bays and harbours, draw landscape, and make faithful portraits of the several headlands, coasts and countries which we might discover; thus, by the united efforts of our little community, the whole of our proceedings, and the information we might obtain in the course of the voyage, would be rendered profitable to those who might succeed us in travelling the remote parts of the globe that we were destined to explore, without the assistance of professional persons, as astronomers or draftsmen."

Mr. ARCHIBALD MENZIES, a notable naturalist who was also a surgeon, was appointed additional to the expedition for the purpose of preserving rare or uncommon plants to add to HIS MAJESTY's valuable collection at Kew.

VANCOUVER speaks appreciatively of the attention given by the Board of Admiralty to the stores supplied to the ships for the personal comfort of the crews, and specially mentions the large quantities of sour-krout, portable soup, wheat in lieu of oatmeal, essence of malt, dried yeast, flour and seed mustard. For medicines there were Dr. James' powders, vitriolic elixir, rob of lemons and oranges and best Peruvian bark. The ships also carried a large assortment of European commodities of a useful or ornamental nature to be used as a means of establishing friendly relations with the different native tribes that might be met with, and an assortment of fireworks to entertain them.

In addition to the mathematical instruments supplied by the Navy Board, which included twelve sextants, the Board of Longitude provided two chronometers, one of which had been carried by COOK on his last voyage. This instrument was placed on board *Discovery*, while the other was supplied to the *Chatham*.

On the 15th December, 1790, VANCOUVER was promoted to Commander and on the next day he commissioned his ship. In addition to the crew the *Discovery* had on board a native named TOWEREROO from one of the Sandwich Islands who was to be repatriated.

The ship left Deptford on the 7th January, 1791, and after taking in ordnance stores in Long Reach sailed for Portsmouth where she arrived on the 5th February, having been detained in the Downs by contrary winds and boisterous weather, during which one of the carpenters' mates fell overboard and was drowned. Leaving Portsmouth on 3rd March a call was made at Guernsey, and Falmouth reached on the 12th where she awaited the arrival of the *Chatham*.

On the 20th VANCOUVER received his final order for the prosecution of the voyage. They instructed him to proceed in the first instance to the Sandwich Islands and while wintering there examine and survey them. Orders from the Government would be sent him there by another vessel regarding the return of the land and buildings on the north-west coast of America, of which British subjects had been dispossessed by the Spaniards. He was to examine and survey in detail the north-west coast of America, between the latitudes of 30° and 60° north, having special regard to the existence of a navigable waterway connecting the North Pacific and North Atlantic Oceans and also the existence of the supposed Straits of Juan de Fuca.

Note was to be taken of the number, extent, situation and time of occupation of any European settlement. Great care was to be exercised in avoiding any incident that may give cause for complaint or jealousy to the Spaniards, while every possible assistance was to be given to any Spanish ships whom they fell in with, employed on similar service to themselves. Between the summers of 1792 and 1793 the ships were to proceed to the Sandwich Islands to carry out repairs and if necessary complete the survey of these Islands.

On completion of the work the ships were to return by way of Cape Horn to Portsmouth. The *Chatham* arrived at Falmouth from Portsmouth on March 30th after a very boisterous passage, when Lieutenant BROUGHTON reported that his ship had proved so crank as to cause considerable alarm. To avoid further delay VANCOUVER resorted to the expedient of transferring all the *Discovery's* shot to the *Chatham* stowing it as low down amidships as possible, which together with the lowering of all possible weight enabled the ships to sail and take advantage of the favourable breeze then blowing.

On the 1st April at daylight the ships stood out from Carrack Roads and at midnight took their departure from the Lizard. VANCOUVER records that the Lizard Light then bore by compass N.N.W. ½° W. about eight leagues distant, which shows that very powerful lights were employed on our coasts even at this early date. He makes the following reference to their departure from their native land :—" We stood to the westward clear of the English Channel with minds it may easily be conceived not entirely free from serious and contemplative reflections. The remote and barbarous regions, which were now destined for some years to be our transitory places of abode were not likely to afford us any means of communicating with our native soil, our families, our friends, or favourites whom we were now leaving far behind."

No particular route to the Pacific having been laid down in his instructions VANCOUVER unhesitatingly decided to sail via the Cape of Good Hope, calling in at Madeira for the purpose of procuring wine and fresh provisions. The *Discovery* was a new ship and VANCOUVER not being satisfied with the fit of her canvas, took the opportunity, on the first day that they were becalmed to send her sails down on deck for alteration. Before bending a new suit they were soaked overboard for some hours in order to remove the size used in the manufacture of the canvas and so prevent mildew in hot rainy weather. This process, he remarks, might probably be found useful in the operation of bleaching.

In order to maintain cleanliness and preserve the health of the crew, the procedure adopted by Captain COOK was followed by VANCOUVER as a matter of routine. All spaces below decks were washed with vinegar and the ships periodically fumigated with a mixture of burning vinegar and gunpowder. Fires were kept lit during each forenoon to promote a constant circulation of fresh air throughout the ship.

The *Chatham* proved to be a very slow sailer which, together with her crank condition, delayed their progress considerably. VANCOUVER decided to stiffen the *Chatham* with shingle ballast, and considering Teneriffe a better place for this purpose than Madeira, shaped course for the former port where they arrived on the 28th April. Putting to sea again on the 7th May the ships stood south through the N.E. trades and crossed the line at midnight on the 27th in Longitude 25° 15′W.

That the seamen of these days were keen observers of wind, weather and ocean currents, and anticipated investigations into these matters made at a considerably later period, is shown by the following quotations :—

> " From the island of St. Antonio we were materially affected by currents and between the latitude of 6° north and the equator strong ripplings were conspicuous on the surface of the sea. These currents contrary to the general opinion seem to possess no regularity as we found ourselves day after day driven in directions very contrary to our expectations from the impulse we had experienced on the former day, and by no means attended with that periodical uniformity pointed out by Mr. NICHOLSON in his lately revised and corrected Indian directory published in the year 1787. On the contrary instead of the currents at this season of the year agreeably to his hypothesis setting to the northward, a most prevailing stream we experienced set to the south and more in a south eastern than a south western direction."

With reference to his crossing the equator in Longitude 25° 15′W. VANCOUVER remarks :—

> " Crossing the equator so far to the westward has been frequently objected to as being liable to entangle ships with the coast of Brazil. I am however of a different opinion, and conceive many advantages are derived by thus crossing the line, such as pursuing a track destitute of those calms and heavy rains, which are ever attendant on a more eastwardly route. By every information I have been enabled to collect, it does not appear that much is to be gained in point of distance by crossing the equator in a more eastwardly longitude; since it seems that vessels which have pursued their southerly course to cross the line under the 10th, 15th, or 20th meridian of west longitude have by the trade wind blowing there in a more southerly direction, been driven equally as far west to the 25th, 26th and 27th degrees of west longitude before they have been enabled to gain the variable winds, without the benefit of a constant breeze and fair weather, which with the very little interruption between the 21st and 24th was experienced during this passage."

The ships sailed in company through the S.E. trades passing within 60 miles of Martin Vas Rocks. On leaving the tropics the *Chatham* proving no faster in strong breezes than in light the *Discovery*, needing the attention of shipwrights, proceeded to Simons Bay leaving the *Chatham* to follow.

The object of this voyage being for the advancement of geographical exploration and navigation, and as the survey of that portion of the Sandwich Islands which COOK had not accomplished would not take up all the time allocated for that purpose VANCOUVER decided to visit the south-west coast of New Holland and acquire some information of that then unknown territory before entering the Pacific.

The Cape was left on the 17th August and course set to the eastward. The ships passed between St. Paul and Amsterdam islands on September 9th and on making the south-west coast of New Holland sighted a conspicuous promontory on the 26th which was named Cape Chatham in honour of the First Lord of the Admiralty. Sailing eastward along the coast all observed points, bays, islets and mountains were named and on the 29th the ships anchored in a large bay which was named King George the Third's Sound. Here the British colours were hoisted, His Majesty's health drunk and possession taken of that country observed to the north-westward of Cape Chatham and eastward so far as the coast should be explored in the name of His present Majesty, for him and for his heirs and successors.

A detailed survey was made of the sound and adjoining inlets which is described as a very excellent and secure harbour, before making their way eastward to Termination Island, so named to mark the conclusion of their survey on this coast.

The total survey extended for a distance of over 300 miles between Cape Chatham and Termination Island. In his journal VANCOUVER gives the positions he fixed of all prominent points and in comparing these positions with those given in the present sailing directions it is interesting to note the close agreement between them.

The ships left the New Holland coast on the 21st October and passing Van Dieman's Land on the 26th steered for and arrived at Dusky Bay in New Zealand on the 2nd November. On the day of their arrival here a heavy N.N.W. gale sprang up, causing *Discovery* to drag her anchors and seek safety in Anchor Island Harbour with so little room as to necessitate the ship being prevented from swinging, by running hawsers from each bow and quarter to the shore. VANCOUVER had visited Dusky Bay in 1773 with Captain COOK, who had surveyed all but the northern arm which he named " Nobody Knows What." While the *Discovery* was repairing damage caused by the gale, VANCOUVER took the opportunity to survey this northern arm, which was found to be divided into two branches by a peninsula, named by COOK, Apparent Island. The heads of these arms were named " Somebody Knows What " in conformity with COOK's name for their entrance. Facile Harbour and Anchor Island Harbour were also carefully surveyed.

On the 22nd November the ships sailed out of Dusky Bay bound for Matavai Bay, Otaheite. Two days later the ships were separated in weathering the coast during a heavy gale of wind. On the 24th, when steering S.S.E. under reefed topsails and mainsail, strange land was discovered comprising a cluster of seven craggy islands. Their position was fixed and they were named The Snares, " as being very likely to draw the unguarded mariner into alarming difficulties." Another island was discovered on the 22nd and named Oparo. Here the natives came off and with great difficulty a few were persuaded to board the ship. On these being made the recipients of gifts, more visitors boarded than it was pleasant to entertain.

When Matavai Bay was reached on the 30th December the *Chatham* was found already at anchor. Lieutenant BROUGHTON reported that he had discovered and taken possession of an island which he had named Chatham Island.

The natives swarmed on board the *Discovery* and showed great delight at the visit of the British ships. VANCOUVER was saddened to learn that most of the friends he had known when he visited the island in 1777 were dead. Otoo the king was still living but had abdicated in favour of his young son who had taken the father's name while the old king, now calling himself Pomurrey, had retired to another island.

Pomurrey visited VANCOUVER who records that on one occasion during the course of dinner the old king drank a whole bottle of undiluted brandy. The result was violent convulsions, but after an hour's nap he arose perfectly sober. With the object of impressing the culprit that such inebriety was most injurious to health VANCOUVER admonished Pomurrey who accused his host of being a stingy fellow and anything but a jolly fellow. In order to effect a cure orders were given to supply him with all the liquor he called for. Within a week VANCOUVER's advice was acknowledged as sound and thereafter a few glasses of wine sufficed.

During the ship's stay of over a period of three weeks, which was for the object of rewatering and obtaining fresh provisions, the opportunity was taken to carry out repairs to hull and rigging and a new boat was built. Friendly intercourse was maintained with the natives and presents exchanged. On one occasion a firework display was given in their honour.

On 24th January, 1792, the ships directed their course to the northward bound for Owhyhee in the Sandwich Islands where they were to rendezvous with the store ship *Dâedalus*, bringing additional instructions from the Government to VANCOUVER. Owhyhee was reached on the 1st March, but there was no news of the *Dâedalus*.

They cruised along the coast to Karakakoa and received on board a chieftain named Tianna, who with his wives and retinue, were carried in the ship to the place of his residence some distance north of Karakakoa. Tianna took a liking to Towereroo, the islander whom VANCOUVER was to repatriate, and on Tianna offering to supply Towereroo with a house and land, Towereroo was taken ashore, VANCOUVER promising to call again the following year and see how he was being treated. To Towereroo was entrusted a letter for delivery to the store ship on her arrival, which contained instructions regarding her subsequent movements.

The ships called at Woahoo and Attowai, finding at the latter place three Englishmen who had been placed ashore from the American brig *Lady Washington* for the purpose of collecting a cargo of sandal wood and pearls.

Presents were exchanged with the natives and a firework display given for their amusement. They greatly desired firearms but all such requests were firmly refused.

Leaving the Sandwich Islands on 17th March, course was set for the new Albion coast which was sighted just one month later in the vicinity of Cape Mendocini. From now on the real work of the expedition was to be carried out. At this time little was known regarding the long coastline northward of the 30th parallel. Sailing northward and keeping close in to the coast, points, bays and inlets were named, until the ships were brought to anchor on the 29th April within the entrance to the Straits of Juan de Fuca.

In his instructions VANCOUVER was directed to pay special attention to these straits. In 1592 a Greek pilot named De Fuca was said to have entered the straits and after twenty-eight days' sailing came out, as he supposed, in the North Atlantic. He then returned by the same route. In 1787 Captain Barkley in the British ship *Imperial Eagle* entered the strait and discovered Barkley Sound. A year later Captain Meares, whose ships and land were seized by the Spaniards at Nootka, entered the strait but was compelled to return owing to the hostility of the natives.

Vancouver's method of survey was the same as that he had seen employed by his old commander, Captain Cook. He navigated his ships as far into the uncharted bays and inlets as the depth of water would permit, and then proceeded to carry out a detailed survey by means of boat parties. He himself always undertook the most arduous and hazardous expeditions and left nothing to chance.

On the 30th April the ships made their way up the straits, anchoring that night off a low sandy spit on the southern shore, which was named New Dungeness on account of its similarity to Dungeness on the south coast of England. Port Discovery was next found and named after the ship, followed by Admiralty Inlet which is now better known as Puget Sound, which name Vancouver originally gave to the south extremity of the inlet in honour of the lieutenant who assisted him with the survey.

In describing this district Vancouver visualized its future civilization and growth in the following words :—" To describe the beauties of this region will on some future occasion be a grateful task to the pen of a skilful panegyrist. The serenity of the climate, the innumerable pleasing landscapes and the abundant fertility that unassisted nature puts forth, require only to be enriched by the industry of man with villages, mansions, cottages, and other buildings to render it the most lovely country that can be imagined, whilst the labour of the inhabitants would be amply rewarded in the bounties which nature seems ready to bestow on cultivation."

The only inhabitants at this time were natives residing in scattered villages with whom Vancouver always exchanged presents and describes them as friendly and honest in the extreme.

The survey of this area completed, the ships moved north and brought up in Birch Bay while surveying parties set out in boats to examine the surrounding district. Vancouver himself took personal charge of the survey to the north-westward and on the 13th June, 1792, found and named Burrard's Canal, on the shores of which now stands the beautiful city of Vancouver. On the way back to the ships two Spanish war vessels were observed at anchor. These ships were also engaged in exploring and Vancouver records his mortification in finding that others had already examined the external shores of the gulf for a few miles beyond where his own survey had extended. From the commanders of the Spanish ships it was learnt that the Spanish Commander-in-Chief at Nootka was awaiting Vancouver's arrival in order to negotiate the restoration of those territories to the crown of Great Britain.

The boats returned to the ships on the 23rd June having travelled a distance of over 330 miles and the next day accompanied by the Spaniards, progress was made to the north-westward.

Carefully examining and surveying every inlet as they went the Spanish and British vessels remained in company until 13th July, when on parting the British and Spanish commanders exchanged copies of their respective surveys.

The British vessels continued to the north-westward negotiating dangerous and intricate channels, while combating gale and fog and suffering great hardship when carrying out long and hazardous expeditions in the boats. On 6th August when standing to windward in Queen Charlotte Sound, the *Discovery* grounded on a bed of sunken rock and her position became perilous. At low water there was only three and a half feet of water forward and four feet under her stern. Anchors were laid out but hove home, so masts and yards were sent down and the ship lightened by the discharge of fuel and ballast. The tide swung the ship's stern into deep water causing her to heel dangerously until her starboard chains were almost level with the water. However, with the turn of the tide the ship gradually righted herself and early next morning was refloated by heaving on the stern cable, without having received any apparent damage. The ship was again ready for sea by noon of that day and on proceeding the *Chatham* took the ground but was refloated without sustaining injury.

Two days later the ships reached the open ocean and thus proved the existence of the island that now bears Vancouver's name.

On the 17th August, when at anchor in Safety Cove awaiting the return of boat parties, the British brig *Venus* arrived and informed Vancouver that the *Dâedalus* was at Nootka, also that the Spanish Commander-in-Chief Sen. Quadra was waiting with great impatience to deliver up the settlement and territories at Nootka. The Captain of the *Venus* had brought with him a letter from the Master of the *Dâedalus* containing the information that Lieutenant Hergeft the commander, Mr. Gooch the astronomer and a seaman of the *Dâedalus* had been murdered by the natives at Woahoo, Sandwich Islands, when on shore procuring water. This determined Vancouver to suspend his survey and return to Nootka immediately. His summer's work consisted in charting the coast of North America from Latitude 39° N. to Point Menzies in Latitude 52° 18′ N.

On the 19th August the ships proceeded southward and on arrival at Nootka nine days later, saluted the Spanish flag with thirteen guns, Vancouver first ascertaining that the salute would be returned. A difference of opinion now arose between Sen. Quadra and Vancouver as to what territories were to be given up and although several interviews took place between them agreement could not be reached. Negotiations were therefore broken off and arrangements made to refer the differences to their respective Governments. Despatches were prepared and sent to England by the first lieutenant Mr. Mudge who it was hoped would return with further instructions. That this dispute in no way affected the friendly relations that existed between the two officers is shown by Vancouver's adopting Sen. Quadra's suggestion that some port or island should be named after both of them. The island that he had circumnavigated and in which Nootka was situated was named " Quadra and Vancouver's Island."

On the 12th October Vancouver's two ships in company with the store ship *Dâedalus* left Nootka and proceeded south, examining the coast as they went. The *Chatham* was despatched to make investigation of the Columbia River which had been discovered by a Mr. Gray in the *Columbia* and of which Sen. Quadra had supplied a sketch. The *Dâedalus* was sent with Mr. Widbey, Master of the *Discovery*, to examine Gray's Harbour. The three ships were to rendezvous later at Monterey.

On the 14th the *Discovery* entered the bay of St. Francisco to which Vancouver refers as follows :—" Having passed the inner points of entrance we found ourselves in a very spacious sound, which had the appearance of containing a variety of as excellent harbours as the known world affords."

On the *Chatham's* arrival the two ships made for Monterrey and on arrival found the *Dâedalus*, also three Spanish vessels under the command of Sen. Quadra who warmly welcomed the Englishmen.

With the willing assistance of Sen. Quadra, Lieutenant Broughton proceeded across the American continent en route to England with despatches and copies of the survey so far as it had been accomplished. Lieutenant Puget was placed in command of *Chatham* during Broughton's absence.

During the coming winter, in accordance with his instructions, Vancouver was to revisit the Sandwich Islands, and before leaving, *Discovery* took on board some black cattle and sheep obtained through the good offices of the Spanish Commander-in-Chief for establishment in the Islands. A similar cargo was carried by the store ship *Dâedalus* for transhipment to the then infant colony in New South Wales.

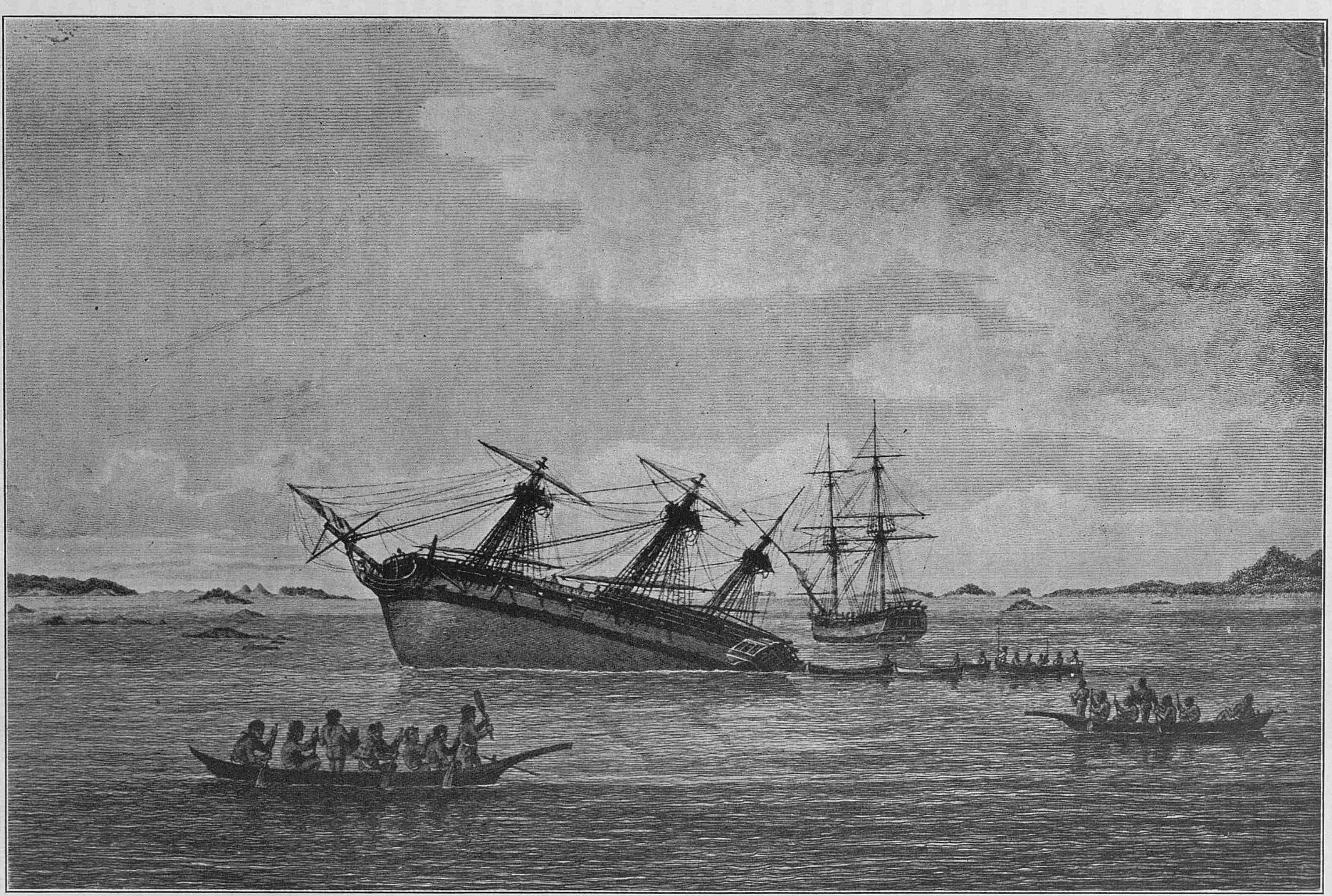
The ships arrived at Owhyhee on the 14th February, 1793.

The *Discovery* remained within the group until the end of March but the *Chatham* was sent back to Nootka earlier in the month for repairs to her hull. In addition to carrying out a survey of the group Vancouver not only established very friendly relations with the natives but did a lot to promote peace and better understanding between the inhabitants of the different islands who would constantly war against each other.

At Waohoo with the assistance of one of the Chiefs from Mowee, three men responsible for the *Dâedalus* murders were tried and publicly executed.

Reaching Nootka on the 20th May and finding the *Chatham* had sailed, Vancouver proceeded northwards and came up with his consort in Fitzhugh's Sound. The survey of the coast was recommenced immediately, the ships working their way slowly northward. Every inlet was carefully examined and charted which entailed wearisome and hazardous boat journeys of long duration in most inclement weather. On the 20th July the ships had reached the north point of Stephen's Island where they found three English vessels, engaged in the fur trade. They conducted Vancouver to an inlet which he named Observatory Inlet and which the natives said led to an extensive inland navigation.

Sailing up this channel Vancouver brought his ship to anchor at a station, which he named Sandy Cove, and from this point personally conducted an extensive survey of the inlet in boats. The examination extended over a period of twenty-three days, during which they travelled over seven hundred miles. While on this expedition the



V. Alexander del from a sketch taken on the spot by Z. Mudge.

**“Discovery” aground in Queen Charlotte Sound.**

natives whom they had hitherto found of a most friendly disposition attacked them, wounding two of the party.

Leaving Observatory Inlet, examination of the coast in a northerly direction was continued as far as Clarence Strait which the ships left on September 22nd, bound south again for Nootka, where VANCOUVER expected to receive further instructions from England regarding the territory he was to receive back from the Spaniards. In speaking of this summer's work VANCOUVER remarks :—" My mind was by no means satisfied with the small extent in a direct line which had been examined during the late summer; yet I derived great consolation in the reflection that, in all probability, we had overcome the most arduous part of our task, and that our future researches would be attended with less disappointment and fatigue. And further, that should the information we had thus obtained reach Europe, there would no longer remain a doubt as to the extent or the fallacy of the pretended discoveries said to have been made by De Fuca and De Fonte, De Fonta, or Fuentes."

The ships arrived back at Nootka on the 5th October and finding no despatches from England awaiting him, VANCOUVER after making a call at St. Francisco, proceeded to Monterrey, despatching the *Chatham* to examine the port of Bodego en route. Before arrival at Monterrey they were joined by *Dâedalus* returning from Port Jackson with stores for them.

In the absence of Sen. QUADRA the Spanish military commandants at both the ports of St. Francisco and Monterrey did not on this occasion welcome the visit of the British ships, so after completing his survey of the coast in a south-easterly direction to Latitude 30° N., VANCOUVER decided to winter once again in the Sandwich Islands where he says :—" I had little doubt that the uneducated inhabitants of Owhyhee or its neighbouring isles would cheerfully afford us that accommodation which had been unkindly denied us at St. Francisco and Monterrey."

Proceeding to the south-east, examining the coast as they went, the ships made a call at Santa Barbara where unlike their reception at the two previous ports a most cordial welcome was extended to them. Here VANCOUVER was able to obtain some fine cattle to add to those he had previously taken to the Sandwich Isles. The survey of the coast was completed on reaching San Domingo, and the ships sailed westward reaching Owhyhee on the 9th January 1794. The natives accompanied by King Tamaahmaah greeted the ships with great enthusiasm. The King informed VANCOUVER that he had issued strict orders to his people regarding their behaviour to the Englishmen, trusting thereby to a continuance of the harmony which had existed on their former visit.

The cattle VANCOUVER had brought were put ashore and he was informed that his former shipment were thriving and adding to their number.

On the 8th February the *Dâedalus*, carrying copies of the expeditions work, and loaded with bread, fruit plants, for discharge at Norfolk Island, sailed for Port Jackson.

Repairs to the ships were taken in hand and VANCOUVER as was his wont set up an observatory on shore for the purpose of taking astronomical observations. The expedition gained the goodwill and respect of the natives who termed them King George's men and VANCOUVER with the willing help of the king assiduously applied himself to spreading the doctrine of peace amongst themselves and the development of the islands to their own advantage. VANCOUVER'S success and popularity with the natives may be gauged from the fact that they ceased to regard themselves as " Tanata no Owhyhee," i.e. the people of Owhyhee, but " Tanata no Britannee," i.e. the people of Britain. They wished to be placed under the protection of King George. This wish VANCOUVER acceded to and the island of Owhyhee was formally ceded to the British crown.

Lieutenant PUGET accompanied by other officers went on shore and hoisting the British colours took possession of the island in the name of King George, a salute being fired from the ships. The following inscription on copper was conspicuously displayed at the King's residence :—" On the 25th of February 1794 Tamaahmaah, King of Owhyhee in council with the principal chiefs of the island assembled on board His Britannic Majesty's sloop *Discovery* in Karakakooa Bay and in the presence of GEORGE VANCOUVER commander of the said sloop, Lieutenant PETER PUGET, commander of His said Majesty's armed tender the *Chatham* and the other officers of the *Discovery ;* after due consideration unanimously ceded the said island of Owhyhee to His Britannic Majesty, and acknowledged themselves to be subjects of Great Britain."

The above cession was, however, never confirmed by the British Government and the island has never been a British possession.

The ships sailed from Karakakooa Bay on the 26th February, accompanied for some distance by the natives in their canoes who were loth to see them go, and after visiting Tyahtatooa and Toeaigh Bays left the Sandwich Group on the 15th March, bound north-east towards the coast of America. Before sailing from Owhyhee VANCOUVER writes :—" Nothing now remained to detain us in Karakakooa Bay the memorable spot where Captain COOK unfortunately fell a sacrifice to his undaunted and enterprising spirit. Notwithstanding it had, in that melancholy instance proved fatal to one of the most illustrious navigators that the world ever produced, yet to us it had proved an asylum, where the hospitable reception and friendly treatment were such as could not have been surpassed by the most enlightened nation on the earth."

The *Chatham*, being unable to keep up with the *Discovery*, was left astern, she having previously been given instructions on which to act in case of separation. *Discovery* reached Cook's River on the Alaska coast on 12th, April and VANCOUVER commenced his survey of its banks, sending a boat ahead of the ship to take soundings as he slowly advanced. Their progress was wrought with the greatest danger both to ships and personnel. Navigation was made increasingly difficult by the swiftness of the tide and the presence of heavy ice floes. To add to their difficulties gales were frequent, and the temperature so low as to cause several cases of frostbite amongst the crew. When the ship could proceed no further boat parties completed the survey which came to a termination on the 6th May in Latitude 61°29′N. Longitude 148°43′W. Finding that no river existed, VANCOUVER changed the name from Cook's River to Cook's Inlet making the following remarks: —" Thus terminated this very extensive opening on the coast of North West America, to which, had the great and first discoverer of it, whose name it bears dedicated one day more to its further examination, he would have spared the theoretical navigators, who have followed him in their closets, the talk of ingeniously ascribing to this arm of the ocean a channel, through which a north-west passage, existing according to their doctrines, might ultimately be discovered."

On their return down the inlet the *Chatham* rejoined *Discovery* and, on the 15th May the ships started down the coast. A month later the examination of Prince William's Sound—" proved to be a branch of the ocean that requires the greatest circumspection to navigate "— was completed.

Shortly after leaving Cook's Inlet the ships were visited by a large fleet of skin canoes, each occupied by two natives. They were of a very friendly disposition and willingly bartered away their hunting and fishing implements which were made from the sinews of animals.

Working slowly down the coast, minutely examining every inlet as they went, their fatigue was added to by frequent heavy gales which caused considerable damage to the spars and rigging of the ships. The hulls too were showing signs of the hard wear to which they had been subject during the past four years, and required constant attention.

On July 3rd they fell in with a British vessel named the *Jackall* and from her commander were informed :— ' Of the death of Louis XVI and of the anarchy which existed in France, her declaration of war against England and of the attempts which the discontented were making in Great Britain by the promulgation of French doctrines, to subvert our inestimable constitution."

On completing examination of King George the Third's archipelago the ships arrived on the 1st August in a small cove situated 8 miles from Cape Omananey. Here they were moored head and stern, and the boats provisioned for a fortnight, set out on their last expedition to connect up the examination of the coast with the point they had reached the previous season. The boats did not return when expected, and knowing the dangers to which they were exposed, great anxiety for their safety was felt on board the vessels. However, on the 19th the four boats returned safely to the ship and the cove in which the ships were then moored was named Port Conclusion to mark the end of the great survey. The day was celebrated as follows :—" In order that the valuable crews of both vessels on whom great hardship and manual labour had fallen, and who had uniformly encountered their difficulties with unremitting exertion, cheerfulness and obedience, might celebrate the day that had thus terminated their labours in these regions, they were served such an additional allowance of grog as was fully sufficient to answer every purpose of festivity on the occasion. This soon prompted a desire for mutual congratulations between the two vessels, expressed by three exulting cheers from each; and it may be easily conceived that more heart-felt satisfaction was scarcely ever more reciprocally experienced or more cordially exchanged.

Referring to the conclusion of his survey, VANCOUVER remarks :—

"The principal object which His Majesty appears to have had in view in directing the undertaking of this voyage having at length been completed, I trust the precision with which the survey of the coast of North West America has been carried into effect will remove every doubt and set aside every opinion of a 'north-west passage' or any communication navigable for shipping existing between the North Pacific and the interior of the American continent within the limits of our researches."

Leaving Port Conclusion the ships set course for Nootka where Vancouver hoped Lieutenant Broughton would be awaiting him with fresh instructions from England and thus enable him to adjust his differences with Sen. Quadra, regarding the return of the territory. In this he was to be disappointed for on arrival at Nookta on the 2nd September he was informed that Lieutenant Broughton had not returned and that Sen. Quadra was dead, which news upset Vancouver greatly. No news having been received by Vancouver the ships sailed for Monterey on the 17th October. The only news awaiting him here was of the safe arrival of Lieutenant Broughton at Madrid. No instructions came from the British Government but the Spanish governor informed them of despatches received from his government to the effect that the documents transmitted by Sen. Quadra and Vancouver had enabled their respective governments to adjust the matter amicably on terms closely approaching those Vancouver had repeatedly offered Sen. Quadra in September 1792.

There was nothing now to detain Vancouver and the ships sailed for home via Cape Horn on the 2nd December.

On the way south they called at Cocos and Gallipagos Islands in order to check their charted position and the *Discovery* having sprung her main lower mast, necessitated a call being made at Valparaiso where they arrived on the 25th March 1795. A new mast not being obtainable the old one was lifted out and restepped end for end in order to bring the defective part below the coamings. On the way south an outbreak of scurvy occurred but with the fresh provisions supplied at Valparaiso the disease was arrested. Vancouver and his officers were lavishly entertained by the Captain-General of Chile, Don Ambrosio Higgins de Vallenar, a native of Ireland, of whose administration Vancouver speaks in the highest terms.

The ships left Valparaiso on the 7th May bound for St. Helena. The battered state of their hulls, spars and gear were the cause of much anxiety during the passage round the Horn but both ships reached port without mishap; *Discovery* on the 3rd July, and *Chatham* on the following day. On learning from the Governor that England was also at war with Holland, Vancouver, sighting a Dutch East Indiaman in the offing, took her as a prize of war, sending on board an officer and prize crew to navigate her home. Admiralty orders were read to the crews enjoining them not to disclose to any person where they had voyaged until permission should be given them to do so and at the same time all logs and journals were collected and placed in Vancouver's keeping.

The *Chatham* was ordered to proceed with despatches for the British General at St. Salvador, Brazil, and the *Discovery*, after undergoing repairs, sailed on the 15th July, joining up with H.M.S. *Sceptre* and a homeward bound convoy. *Discovery* arrived in the Shannon on the 12th September, 1795. Vancouver, who in his absence had been advanced to the rank of Post Captain with seniority dated 28th August, 1794, handed over the ship to his senior lieutenant and proceeded to London where he reported at the Admiralty and handed in all documents relating to the voyage. The *Chatham* reached England on the 17th October and the *Discovery* arrived in the Thames three days later. This great voyage of exploration had lasted for four years eight months twenty-nine days. Vancouver remarks :—"I offered up my unfeigned thanks to the Great Disposer of all human events for the protection he had been pleased on all occasions to vouchsafe unto us and which had now happily restored us to our country, our families and our friends."

On paying off his ship Vancouver at the request of the Admiralty set to work on the history of his voyage. He was then in very poor health, worn out with the severity of his service. Since a boy of fifteen he had been almost continuously afloat serving under conditions of the greatest hardship, and it had left its mark on him. On the 10th May, 1798, two years eight months after his return to England this great British seaman passed away at the age of forty-one and was buried in St. Peter's Churchyard, Petersham, Richmond.

Inside the church is a monumental tablet erected to his memory by "The Hudson's Bay Company."

Before his death Vancouver was able to finish all but the end of his narrative which was completed and submitted to His Majesty King George the Third by his brother John Vancouver in the same year as his death. Preserved in the Admiralty Library is a chart showing part of the coast of North-West America with the tracks of His Majesty's Sloop *Discovery* and Armed Tender *Chatham* prepared from Vancouver's original survey. A glance at the coast line on this chart with its innumerable inlets, islands and rocks, which were so faithfully tracked and determined, causes one to appreciate better the immensity of the task, which could only have been undertaken and carried through by a man of indomitable courage. Vancouver never spared himself, and expected the same service from others as he himself gave, gladly sacrificing all in the interests of that great service to which he belonged. His prediction as to the future of those then virgin regions has long since been fulfilled, and Canada has honoured and perpetuated the name of this intrepid seaman by giving one of her finest cities his name.

Acknowledgment is made to the Admiralty Librarian for the loan of literature from which this article has been compiled.

## SOUTHERN ICE REPORTS.

### During the year 1936.

### July.

| Year. | Day. | Position of Ice. | | Description. | Remarks. | Name of Ship reporting. |
|---|---|---|---|---|---|---|
| | | Latitude. | Longitude. | | | |
| 1936 | 25 | 56° 56′ S. | 111° 22′ W. | One berg | Height 193 feet, length 319 feet (sextant angles) | S.S. *Port Denison.* |

### August.

No reports.

### September.

| Year. | Day. | Latitude. | Longitude. | Description. | Remarks. | Name of Ship reporting. |
|---|---|---|---|---|---|---|
| 1936 | 28 | 53° 09′ S. | 00° 22′ E. | Pack Ice | First ice seen since leaving Cape Town | R.R.S. *Discovery II.* |
| | | 51° 58′ S. | 1° 39′ W. | One berg | Small irregular 6 miles to North | do. |
| | 29 | 51° 22′ S. | 2° 39′ W. | One berg | Small irregular within 1 mile | do. |
| | 30 | 51° 43′ S. | 6° 25′ W. | One berg | Small irregular within 2½ miles | do. |

**Reports of Ice previous to July, August and September, 1936, will be found in the "Marine Observer," Volume XIII, No. 123, p. 104.**

# WIRELESS WEATHER SIGNALS.

## I.—SHIPS' WIRELESS WEATHER SIGNALS.

A full description of the world-wide system of voluntary "Selected Ships" routine weather reports with instructions was given on pp. 36-47 of the January number of this volume of The Marine Observer.

The list which follows contains the latest information of stations to which "A Selected Ships" should report in accordance with those instructions, and stations detailed to intercept or receive reports from "B Selected Ships" also in accordance with those instructions.

To decode these reports, and for information of the system of communication of "Selected Ships," all concerned are referred to the Pamphlet, M.O. 329, concerning which special notice to the masters of British ships will be found on p. 39, paragraphs (27) and (34) of the January 1937 number of The Marine Observer.

## WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "A SELECTED SHIPS."

### Request for Information.

The attention of Meteorological Services is directed to the invitation given on page 36 of vol. xiv, no. 125, January, 1937.

| Ocean. | Station. | Position. | Call Sign. | Frequency and Wave Length. | | Area and limits covered by Station. | Telegraphic address of Meteorological Centre. | Information required—Limit of Groups. | Notes. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | For Station to call up "Selected Ships." | For "Selected Ships" to report to Station. | | | | |
| *Column No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* | *No. 5.* | *No. 6.* | *No. 7.* | *No. 8.* | *No. 9.* | *No. 10.* |
| North Atlantic and North Sea. | Portishead. | Lat. 51° 28′ 41″ N.<br>Long. 2° 47′ 30″ W. | **GKU.** | 149 kc/s. (2013 metres) and 121 kc/s. (2479 metres) simultaneously | 143 kc/s. (2100 metres). | North Sea and Eastern North Atlantic East of Longitude 40° W. but not within 300 miles of station. (*see* Chart of the World.) | Weather London. | Weather only, up to seven groups, preferably No. 3 Supplementary Groups. | "Selected Ships" chosen to report in given order notified by station daily at 2300, 0330, and 1030 G.M.T. Roll call thus—Weather London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m. |
| North Atlantic and Mediterranean. | Gibraltar. | Lat. 36° 08′ 32″ N.<br>Long. 5° 20′ 29″ W. | **GYW.** | 125 kc/s. (2400 metres). | 143 kc/s. (2100 metres). | Eastern North Atlantic, South of Lat. 37° N. and Mediterranean Sea. | Meteor Gibraltar. | Weather only. No. 3 Supplementary Groups. | All British "A Selected Ships" within area should report in accordance with Schedule. |
| North Atlantic. | Horta, Azores. | Lat. 38° 32′ N.<br>Long. 28° 38′ W. | **CTG.** | 125 kc/s. (2400 metres). | 125 kc/s (2400 metres). | Those "A" Selected Ships not in the Roll Call for reporting to Weather London through Portishead, in the Eastern North Atlantic, east of Long. 40° W should report to this station. | Radio Horta. | Weather only, up to seven groups, preferably No. 3 Supplementary Groups. | "A" Selected Ships in the Eastern North Atlantic not on the roll call made through Portishead (described in these notes for Portishead) should report to Horta in accordance with schedule given in the instructions for British "A" Selected Ships. |
| | Louisburg. | Lat. 46° 09′ 16″ N.<br>Long. 59° 56′ 48″ W. | **VAS** | 143 kc/s. (2100 metres). | 143 kc/s. (2100 metres). | North Atlantic West of Longitude 40° W. | Signals Toronto. | Weather only, preferably No. 3 Supplementary Groups. | All British "A" Selected Ships within area when bound to or from Newfoundland and Canadian ports or ports to the northward to address their 0000 and 1200 G.M.T. observations to Signals Toronto and their 1800 G.M.T. observations to CQ in accordance with schedule. |
| | Chatham Mass. | Lat. 41° 43′ N.<br>Long. 70° 47′ W. | **WCC.** | | 142·9kc/s. (2098 metres). | North Atlantic West of Longitude 40° W. | Observer Washington | Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required. | All British "A Selected Ships" within area when bound to or from United States ports or ports to the southward to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule. |
| | Amagansett (Montauk). | Lat. 41° 00′ N.<br>Long. 72° 03′ W. | **WSL.** | | | | | | |
| | Thomaston. | Lat. 44° 01′ N.<br>Long. 69° 13′ W. | **WAG.** | | | | | | |
| | Jupiter. | Lat. 26° 42′ N.<br>Long. 80° 02′ W. | **WMR.** | | | | | | |
| | Palm Beach. | Lat. 26° 42′ N.<br>Long. 80° 02′ W. | **WOE.** | | | | | | |

## WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "A SELECTED SHIPS."

*(Continued.)*

| Ocean. | Station. | Position. | Call Sign. | Frequency and Wavelength. | | Area and limits covered by Station. | Telegraphic address of Meteorological Centre. | Information required—Limit of Groups. | Notes. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | For Station to call up "Selected Ships." | For "Selected Ships" to report to Station. | | | | |
| *Column No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* | *No. 5.* | *No. 6.* | *No. 7.* | *No. 8.* | *No. 9.* | *No. 10.* |
| South Atlantic. | Slangkop (Cape Town) | Lat. 34° 08′ 46″ S.<br>Long. 18° 19′ 18″E. | **ZSC** | — | 143 kc/s. (2100 metres). | South Atlantic Westward of 25° E. and within a range of about 2,000 miles of station. | Met. | Weather only. Four universal groups and first group of No. 6 Supplementary groups. | Only 0600 G.M.T. observation required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T. |
| Red Sea and Indian Ocean. | Port Sudan. | Lat. 19° 36′ 35″ N.<br>Long. 37° 13′ 28″E. | **STP** | — | 143 kc/s.† (2100 metres). | From Suez to Ras Fartak, Ras Hafun, and western limit of Colombo area. | Weather Khartoum. | Weather only. Four universal groups. | All British "A Selected Ships" within area should report in accordance with Schedule.<br>† Alternatively see particulars on p. 113 and use wavelength and times for "B Selected Ships." |
| Indian Ocean. | Jacobs (Durban). | Lat. 29° 55′ 40″ S.<br>Long. 30° 58′ 50″E. | **ZSD** | — | 143 kc/s. (2100 metres). | Indian Ocean S. of 20° S. and Eastward of 25° E. and within a range of about 2,000 miles of station. | Met. | Weather only. Four universal groups and first group of No. 6 Supplementary Groups. | Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T. |
| | Bombay. | Lat. 19° 04′ 55″ N.<br>Long. 72° 49′ 54″E. | **VWB** | — | 143 kc/s. (2100 metres). | Arabian Sea N. of line C. Comorin to Ras Fartak. | Weather. | Weather only. No. 9 Supplementary Groups. | See Section (35), p. 40 January 1937 number. |
| | Madras. | Lat. 12° 59′ 17″ N.<br>Long. 80° 10′ 56″E. | **VWM** | — | 143 kc/s. (2100 metres). | Bay of Bengal N. of line C. Comorin to Achin Head. | Weather. | Weather only. No. 9 Supplementary Groups. | |
| | Colombo. | Lat. 6° 55′ 14″ N.<br>Long. 79° 52′ 46″E. | **VPB** | 143 kc/s. (2100 metres). | 143 kc/s. (2100 metres). | Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1500 miles. | Weather. | Weather only. No. 6 Supplementary Groups preferred. | All British "A Selected Ships" within area should report in accordance with Schedule. |
| | Mombasa. | Lat. 4° 03′ 11″ S.<br>Long. 39° 39′ 49″E. | **VPQ** | — | 125 kc/s. (2400 metres). | From Ras Hafun to Lat. 20° S. when westward of the Colombo area. | Weather Nairobi. | Weather only. No. 6 Supplementary Groups. | All British "A Selected Ships" within area should report 0600 G.M.T. observations. |
| | Perth. | Lat. 32° 01′ 51″ S.<br>Long. 115° 49′ 31″E. | **VIP** | 125 kc/s. (2400 metres). | 143 kc/s. (2100 metres). | Indian Ocean and Southern Ocean between Long. 90° and 135° E.; but not within 100 miles of the coast. | Weather. | Weather only. No. 9 Supplementary Groups. | All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 38, of the January 1937 number. |
| North Pacific and China Sea. | Cape d'Aguilar, Hong Kong. | Lat. 22° 12′ 39″ N.<br>Long. 114° 15′ 11″E. | **VPS** | 8330 kc/s. (36 metres) or 500 kc/s. (600 metres). | 143kc/s.* (2100 metres). | China Sea and North Pacific to about 1,500 miles from station. | Royal Observatory | Weather only No. 9 Supplementary Groups. | All British "A Selected Ships" within area should report in accordance with Schedule.<br>*Alternatively see particulars on p. 114 and use wave length and times for "B Selected Ships." |
| South Pacific. | Sydney. | Lat. 33° 46′ 00″ S.<br>Long. 151° 03′ 09″E. | **VIS** | 125 kc/s. (2400 metres). | 143 kc/s. (2100 metres). | S. Pacific Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast. | Weather. | Weather only. No. 9 Supplementary Groups. | All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 38, of the January 1937 number. |

## WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

| Ocean. | Station. | Position. | Call Sign. | Telegraphic address of Meteorological Centre desiring information. | Information desired. | Notes. |
|---|---|---|---|---|---|---|
| *Column No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* | *No. 5.* | *No. 6.* | *No. 7.* |
| North Sea. | Humber. | Lat. 53° 19′ 43″ N.<br>Long. 0° 16′ 34″ E. | **GKZ** | Weather London | Weather in four universal groups, optional No. 3 Supplementary Groups. | No roll call. British "B" Selected Ships should report at routine times when more than **20** miles from the coast. |
| North Atlantic. | Malin Head. | Lat. 55° 21′ 45″ N.<br>Long. 7° 20′ 30″ W. | **GMH** | Weather London. | Weather in four universal groups, optional No. 3 Supplementary Groups. | Station will indicate at 0805 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2005 G.M.T., with ordinary traffic calls, the names of British "B" Selected ships and other British ships within range and North of Lat. 54° N., and West of Long. 7° W. who are desired to report weather at routine times. Thus :—Call signs of ships to report weather through G.M.H. See Section (35), p. 40, January, 1937, number as amended by June, 1937, Supplement. |
| | Valentia. | Lat. 51° 55′ 48″ N.<br>Long. 10° 20′ 54″ W. | **GCK** | Weather London. | Weather in four universal groups, optional No. 3 Supplementary Groups. | Station will indicate at 0825 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2025 G.M.T., with ordinary traffic calls, the names of British "B" Selected Ships and other British ships within range, South of Lat. 54° N., and to southward of Ireland West of Long. 7° W., who are desired to report weather at routine times.<br>Thus :—Call signs of ships to report weather through G.C.K. See Section (35), p. 40, January, 1937, number as amended by June 1937 Supplement. |
| | St. John's N.F. | Lat. 47° 34′ 09″ N.<br>Long. 52° 41′ 04″W. | **VON** | Signals Toronto. | Weather only, optional No. 3 Supplementary Groups. | |
| North Atlantic and Mediterranean | Gibraltar | Lat. 36° 08′ 32″ N.<br>Long. 5° 20′ 29″ W. | **GYW** | Meteor Gibraltar. | Weather in four universal groups only. | |
| Mediterranean | Alexandria. | Lat. 31° 11′ 53″ N.<br>Long. 29° 51′ 46″ E. | **SUH** | Meteor Heliopolis | Weather in four universal groups, optional Supplementary Groups. | |
| South Atlantic. | Salinas. | Lat. 0° 37′ 00″ S.<br>Long. 47° 23′ 00″ W. | **PPL** | Meteoro Rio. | Weather only, including Supplementary Groups. | |
| | S. Luiz. | Lat. 2° 31′ 28″ S.<br>Long. 44° 16′ 30″ W. | **PXM** | | | |
| | Fortaleza. | Lat. 3° 42′ 49″ S.<br>Long. 38° 30′ 56″ W. | **PPC** | | | |
| | Natal. | Lat. 5° 46′ 30″ S.<br>Long. 35° 16′ 20″ W. | **PXN** | | | |
| | Olinda. | Lat. 8° 00′ 55″ S.<br>Long. 34° 50′ 40″ W. | **PPO** | | | |
| | Amaralina. | Lat. 13° 00′ 50″ S.<br>Long. 38° 28′ 27″ W. | **PPA** | | | |
| | Abrolhos. | Lat. 17° 57′ 35″ S.<br>Long. 38° 42′ 00″ W. | **PXH** | | | |

## WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

*(Continued.)*

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

| Ocean. | Station. | Position. | Call Sign. | Telegraphic address of Meteorological Centre desiring information. | Information desired. | Notes. |
|---|---|---|---|---|---|---|
| *Column No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* | *No. 5.* | *No. 6.* | *No. 7.* |
| South Atlantic (*continued*). | Victoria. | Lat. 20° 18′ 52″ S.<br>Long. 40° 19′ 06″ W. | **PPT** | Meteoro Rio. | Weather only, including supplementary groups. | |
| | Rio. | Lat. 22° 59′ 19″ S.<br>Long. 43° 11′ 26″ W. | **PPR** | | | |
| | Santos. | Lat. 23° 59′ 22″ S.<br>Long. 46° 18′ 18″ W. | **PPS** | | | |
| | Florianopolis. | Lat. 27° 35′ 22″ S.<br>Long. 48° 34′ 17″ W. | **PPF** | | | |
| | Juncçao. | Lat. 32° 03′ 22″ S.<br>Long. 52° 08′ 13″ W. | **PPJ** | | | |
| Red Sea and Indian Ocean. | Port Sudan | Lat. 19° 36′ 35″ N.<br>Long. 37° 13′ 28″ E. | **STP** | Weather Khartoum. | Weather only, four universal groups. | |
| Persian Gulf | | | | | | |
| Indian Ocean. | Jacobs (Durban). | Lat. 29° 55′ 40″ S.<br>Long. 30° 58′ 50″ E. | **ZSD** | Met. | Weather only, 4 universal groups and first group of No. 6 Supplementary Groups. | |
| | Algoa Bay (Port Elizabeth). | Lat. 33° 57′ 16″ S.<br>Long. 25° 35′ 30″ E. | **ZSQ** | Met. | Weather only, 4 universal groups and first group of No. 6 Supplementary Groups. | |
| | Calcutta. | Lat. 22° 33′ 31″ N.<br>Long. 88° 20′ 16″ E. | **VWC** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Rangoon. | Lat. 16° 45′ 57″ N.<br>Long. 96° 11′ 51″ E. | **VTR** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Madras. | Lat. 12° 59′ 17″ N.<br>Long. 80° 10′ 56″ E. | **VWM** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Bombay. | Lat. 19° 04′ 55″ N.<br>Long. 72° 49′ 54″ E. | **VWB** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | See Section (35), p. 40, January 1937 number. |
| | Karachi. | Lat. 24° 51′ 05″ N.<br>Long. 67° 02′ 32″ E. | **VWK** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | See Section (35), p. 40, January 1937 number. |
| | Matara. | Lat. 6° 01′ 07″ N.<br>Long. 80° 35′ 39″ E. | **GZP** | Weather. | | |
| | Mombasa. | Lat. 4° 03′ 11″ S.<br>Long. 39° 39′ 49″ E. | **VPQ** | Weather Nairobi. | | |
| | Dar-es-Salaam. | Lat. 6° 50′ 38″ S.<br>Long. 39° 17′ 24″ E. | **ZBZ** | Weather Nairobi. | | |
| | Mauritius. | Lat. 20° 23′ 41″ S.<br>Long. 57° 35′ 25″ E. | **VRS** | Observatory Mauritius. | Weather only, 4 universal groups and first of No. 6 Supplementary Groups. | |
| | Geraldton. | Lat. 28° 47′ 15″ S.<br>Long. 114° 36′ 24″ E. | **VIN** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | When east of Long. 90° E., but not within 100 miles of the coast. |
| | Esperance. | Lat. 33° 52′ 40″ S.<br>Long. 121° 53′ 34″ E. | **VIE** | | | |
| Indian Ocean and China Sea. | Penaga (Penang). | Lat. 5° 32′ 02″ N.<br>Long. 100° 22′ 51″ E. | **VPX** | Obs. Weather Singapore. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Paya Lebar (Singapore). | Lat. 1° 20′ 26″ N.<br>Long. 103° 53′ 20″ E. | **VPW** | | | |

## WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

*(Continued.)*

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

| Ocean. | Station. | Position. | Call Sign. | Telegraphic address of Meteorological Centre desiring information. | Information desired. | Notes. |
|---|---|---|---|---|---|---|
| *Column No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* | *No. 5.* | *No. 6.* | *No. 7.* |
| North Pacific and China Sea. | Cape d'Aguilar, Hong Kong. | Lat. 22° 12′ 39″ N.<br>Long. 114° 15′ 11″ E. | **VPS** | Royal Observatory. | Weather only, preferably No. 9 Supplementary Groups. | |
| South Pacific. | Auckland. | Lat. 36° 50′ 37″ S.<br>Long. 174° 46′ 08″ E. | **ZLD** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Wellington. | Lat. 41° 16′ 26″ S.<br>Long. 174° 45′ 55″ E. | **ZLW** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Awarua. | Lat. 46° 30′ 47″ S.<br>Long. 168° 22′ 24″ E. | **ZLB** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Chatham Island. | Lat. 43° 57′ 28″ S.<br>Long. 176° 34′ 25″ W. | **ZLC** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Rarotonga. | Lat. 21° 11′ 52″ S.<br>Long. 159° 48′ 52″ W. | **ZKR** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Apia. | Lat. 13° 50′ 17″ S.<br>Long. 171° 49′ 42″ W. | **ZMA** | Weather Wellington. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Suva. | Lat. 18° 08′ 43″ S.<br>Long. 178° 27′ 35″ E. | **VRP** | Weather Suva. | Weather in four universal groups, optional supplementary groups. | See Section (35), p. 40, January, 1937 number as amended by May, 1937 Supplement. |
| | Thursday I. | Lat. 10° 35′ 14″ S.<br>Long. 142° 12′ 43″ E. | **VII** | Weather. | Weather only, preferably No. 9 Supplementary Groups | When west of Long. 160° E., but not within 100 miles of the coast. |
| | Townsville. | Lat. 19° 16′ 09″ S.<br>Long. 146° 49′ 47″ E. | **VIT** | Weather | Weather only, preferably No. 9 Supplementary Groups. | |
| | Brisbane. | Lat. 27° 25′ 34″ S.<br>Long. 153° 07′ 19″ E. | **VIB** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | |
| | Melbourne. | Lat. 37° 46′ 56″ S.<br>Long. 144° 52′ 09″ E. | **VIM** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | When between Long. 90° E. and 160° E., but not within 100 miles of the coast. |
| | Adelaide. | Lat. 34° 51′ 14″ S.<br>Long. 138° 31′ 55″ E. | **VIA** | Weather. | Weather only, preferably No. 9 Supplementary Groups. | |

## II. WIRELESS WEATHER SIGNALS.

### Bulletins.

It is necessary to make careful distinction between wireless weather reports and weather forecasts.

A wireless weather report is a statement, in plain language or code, of the observed conditions prevailing at a place at a given time.

A weather forecast is a statement, usually in plain language, of weather which may be expected at a place or over an area in the near future.

For forecasts issued to shipping by wireless it is usual to publish full descriptions giving abbreviated names of areas with prescribed limits and the length of period; if such published description is not given, the place, or area and the period to which the forecasts apply are included in the message.

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## SOUTH WEST AFRICA AND UNION OF SOUTH AFRICA.

### Weather Shipping Bulletins.

The following W/T stations transmit weather Reports in code giving actual observations at 0630 G.M.T. at coast stations and Forecasts of Weather in plain language for coastal areas indicated on the Chart below.

**Station reports** are made in the International Ships Wireless Weather Telegraphy Code in three five-figure groups.

### Instructions for decoding.

To decode these reports the tables given in M.O. 329 are required (Decode for Use with International Code for Wireless Weather messages from ships [Fourth edition], obtainable from H.M. Stationery Office, price 6d.).

The Key letters are fully described on p. 44 of the January, 1937 number, and in M.O. 329, with the exception of symbol II. II = the distinguishing figures of the coast stations, which are given on the chart.

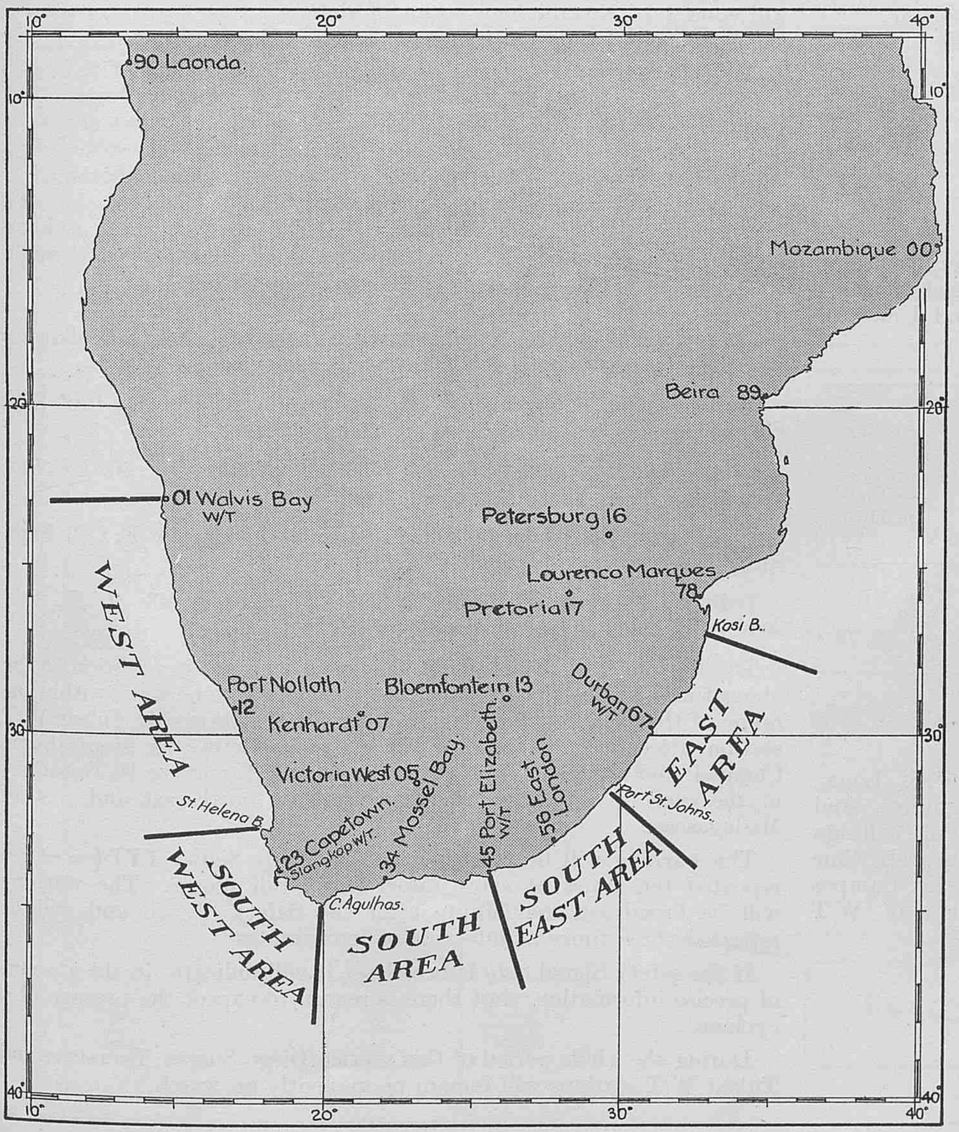
Key letters—IICAK DDFww PPVTT.

### Explanation of Chart.

The numbers alongside the names of the stations on the chart are distinguishing numbers.

The Areas for which weather forecasts are made are indicated in large print.

**Chart showing Stations and Forecast Areas for Weather Shipping Bulletins South West Africa and Union of South Africa and Stations for Portuguese East Africa.**


10°
20°
30°
40°
10°
20°
30°
40°
90 Laonda.
Mozambique 00
Beira 89
01 Walvis Bay W/T
Petersburg 16
Lourenco Marques 78
Pretoria 17
Kosi B.
Port Nolloth 12
Bloemfontein 13
Durban W/T 67
Kenhardt 07
Victoria West 05
Mossel Bay 34
Port Elizabeth W/T 45
East London 56
Port St. Johns.
St. Helena B.
23 Capetown. Slangkop W/T.
C. Agulhas.
WEST AREA
SOUTH WEST AREA
SOUTH AREA
SOUTH EAST AREA
EAST AREA

| W/T Station and Position approx. Latitude. | Longitude. | Call Sign. | Wave-length. | Times of Transmission. Station reports. G.M.T. | Forecasts. G.M.T. | Station distinguishing figures (*see* Chart). |
|---|---|---|---|---|---|---|
| Walvis Bay ... ...<br>22° 58′ S. | 14° 30′ E. | **ZSV** | 625 | 0850 | 1250 | 23, 12, 01, 90. |
| Capetown (Slangkop)<br>34° 09′ S. | 18° 19′ E. | **ZSC** | 600 | 0930 | 1220 | 56, 45, 34, 23, 12, 01. |
| | | | 2100 | 0935 | — | 00, 01, 05, 07, 12, 13, 16, 17, 23, 34, 45, 56, 67, 78, 89, 90. |
| Port Elizabeth (Algoa Bay).<br>33° 57′ S. | 25° 35′ E. | **ZSQ** | 600 | 0820 | 1230 | 67, 56, 45, 34, 23. |
| Durban (Jacobs)<br>29° 56′ S. | 30° 59′ E. | **ZSD** | 600 | 0810 | 1205 | 89, 78, 67, 56, 45. |
| | | | 2100 | 0900 | — | 00, 01, 05, 07, 12, 13, 16, 17, 23, 34, 45, 56, 67, 78, 89, 90. |

### Sample Message.

(Broadcast by Capetown, Slangkop W/T, 29th March, 1933.)

*Station Reports.*

| | | |
|---|---|---|
| *56520* | *20300* | *13772* |
| *45910* | *00003* | *13670* |
| *34001* | *28205* | *13666* |
| *23021* | *08103* | *13563* |
| *12012* | *28104* | *16155* |
| *0100X* | *00003* | *14667* |

*Forecast.*

*Coast forecast, Wednesday 29th March, Cloudy with local fogs in west, south-west, south and south-east, fine in east, light to moderate, north-westerly to south-westerly winds, sea slight to moderate.*

### III.—Wireless Time Signals.

**Cape Town (Slangkop) W/T Station,** call sign **ZSC,** Latitude 34° 09′ S., 18° 19′ E. (approx.), broadcasts on a wavelength of 600 metres (I.C.W.) time signals which are actuated automatically from the Royal Observatory at the Cape by direct land line.

The time signals are broadcast according to the New International System of W/T time signals and the procedure is as follows :—

G.M.T.

| H. | M. | S. | | H. | M. | S. | |
|---|---|---|---|---|---|---|---|
| 20 | 56 | 05 | to | 20 | 56 | 50 | ▬ ▬ ▬ repeated 5 times at 10 second intervals. |
| | 57 | 00 | ,, | | 57 | 50 | ▬ • • ▬ repeated 10 times at 5 second intervals. |
| | 57 | 55 | ,, | | 58 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 58 | 08 | ,, | | 58 | 10 | ▬ • |
| | 58 | 18 | ,, | | 58 | 20 | ▬ • |
| | 58 | 28 | ,, | | 58 | 30 | ▬ • |
| | 58 | 38 | ,, | | 58 | 40 | ▬ • |
| | 58 | 48 | ,, | | 58 | 50 | ▬ • |
| | 58 | 55 | ,, | | 59 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 59 | 06 | ,, | | 59 | 10 | ▬ ▬ • |
| | 59 | 16 | ,, | | 59 | 20 | ▬ ▬ • |
| | 59 | 26 | ,, | | 59 | 30 | ▬ ▬ • |
| | 59 | 36 | ,, | | 59 | 40 | ▬ ▬ • |
| | 59 | 46 | ,, | | 59 | 50 | ▬ ▬ • |
| 20 | 59 | 55 | ,, | 21 | 00 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |

## PORTUGUESE EAST AFRICA.

### II.—Weather Shipping Bulletins.

The following W/T Stations transmit Weather Reports on 600 m. in code, giving actual observations at 0630 G.M.T. at coast stations, in the same way as those given for South West Africa and Union of South Africa. For key and explanation *see* page 115.

| W/T Station. | Position approx. | | Call Sign. | Times of Transmission. | | Station distinguishing figures (*see* Chart p. 115). |
|---|---|---|---|---|---|---|
| | Latitude. | Longitude. | | Station reports. G.M.T. | Forecasts. G.M.T. | |
| Lourenço Marques | 25° 58′ S. | 32° 36′ E. | **CQE** | 0910 | 1310 | 56, 67, 78, 89. |
| Mozambique ... | 15° 02′ S. | 40° 45′ E. | **CQF** | 0900 | None. | 00, 89, 78. |

### III.—Wireless Time Signals.

**Lourenço Marques, W/T station,** Lat., 25° 58′ 05″ S., Long., 32° 35′ 39″ E., call sign **CQE,** wavelength 600 metres, and **Polana W/T station,** Lat., 25° 57′ 40″ S., Long., 32° 35′ 59″ E., call sign **CRAP** wavelength 2,400 metres, C.W., transmit, simultaneously, time signals automatically by means of the pendulum clock at Campos Rodrigues Observatory. The new International system of W/T time signals is used.

The transmitting times are :—

G.M.T.

| | h. | m. | s. | | h. | m. | s. |
|---|---|---|---|---|---|---|---|
| From | 7 | 57 | 00 | to | 8 | 00 | 00 |
| ,, | 18 | 57 | 00 | ,, | 19 | 00 | 00 |

The procedure as regards each series of signals is as follows :—

G.M.T.

| h. | m. | s. | | h. | m. | s. | Signal. |
|---|---|---|---|---|---|---|---|
| 7<br>18 | 57 | 00 | to | 7<br>18 | 57 | 50 | ▬ • • ▬ ▬ • • ▬ ▬ • • ▬<br>Prevenção. Sinais feitos à mão (Prepare. Time signal coming). |
| | 57 | 55 | ,, | | 58 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 58 | 08 | ,, | | 58 | 10 | ▬ • |
| | 58 | 18 | ,, | | 58 | 20 | ▬ • |
| | 58 | 28 | ,, | | 58 | 30 | ▬ • |
| | 58 | 38 | ,, | | 58 | 40 | ▬ • |
| | 58 | 48 | ,, | | 58 | 50 | ▬ • |
| | 58 | 55 | ,, | | 59 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 59 | 06 | ,, | | 59 | 10 | ▬ ▬ • |
| | 59 | 16 | ,, | | 59 | 20 | ▬ ▬ • |
| | 59 | 26 | ,, | | 59 | 30 | ▬ ▬ • |
| | 59 | 36 | ,, | | 59 | 40 | ▬ ▬ • |
| | 59 | 46 | ,, | | 59 | 50 | ▬ ▬ • |
| 7<br>18 | 59 | 55 | ,, | 8<br>19 | 00 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |

*Note.*—The error of the Observatory clock is stated never to exceed a few hundredths of a second.

Occasionally Campos Rodrigues observatory will transmit other time signals, which must not be confused with those given above. These signals belong to the category of rhythmic time signals, and will consist of several long series of dots.

## MADAGASCAR.

### II.—Wireless Storm Warnings.

CYCLONE warnings are broadcast when necessary by the following stations on a wavelength of 600 metres, in each case :—

**Majunga :** Latitude 15° 43′ S., Longitude 46° 20′ E., Call Sign **FIO.,** Times of transmission, 0500, 1630 G.M.T.

**Diégo Suarez :** Latitude 12° 15′ S., Longitude 49° 26′ E., Call Sign **FIL.,** Times of transmission, 0430, 1600 G.M.T.

**Tamatave :** Latitude 18° 09′ S., Longitude 49° 26′ E. Call Sign, **FIS.,** Times of transmission, 0415, 1615 G.M.T.

**Tulear :** Approx. Latitude 23° 21′ S., Longitude 43° 40′ E., Call sign **FIT** Times of transmission 0445, 1645 G.M.T.

The warning will be broadcast at every odd hour, in addition to the above times, during the probable passage of the cyclone when within the range of the W/T Stations, by Majunga W/T station and Tulear W/T station, alternately, in the case of a cyclone affecting the Mozambique Channel, and alternately by Diégo Suarez and Tamatave W/T stations in the case of a cyclone affecting the area north-east and east of Madagascar.

The warning will be preceded by the Safety Signal **TTT** (— — —) repeated ten times at short intervals on full power. The warning will be broadcast one minute after the Safety Signal, and will be repeated three times at intervals of ten minutes.

If the safety Signal *only* is broadcast it will indicate, in the absence of precise information, that there is reason to expect the passage of a cyclone.

During the whole period of this service Diégo Suarez, Tamatave and Tulear W/T stations will remain permanently on watch.

## MAURITIUS.

### II.—Wireless Weather Bulletins.

**Mauritius W/T Station** approx. position Latitude 20° 24′ S., Longitude 57° 35′ E.

Call sign **VRS.**

Wavelength 600 metres.

Times of transmission (during cyclone season only November to April).

0830 G.M.T.—Weather report in code giving 0500 G.M.T. observations at the stations given below, followed by a general statement of existing weather conditions.

Station reports in International Ships Wireless Weather Telegraphy Code in two five-figure groups preceded by name of station.

To decode these reports the tables given in M.O. 329 are required. The Key Letters are fully described on p. 44 of the January, 1937, number, and in M.O. 329.

Key letters—DDFww PPVTT.

Observation stations :—

| *Station.* | *Position (approx.)* *Latitude.* | *Longitude.* |
|---|---|---|
| Seychelles ... ... ... ... | 4° 34′ S. | 55° 28′ E. |
| Mauritius ... ... ... ... | 20° 11′ S. | 57° 27′ E. |
| Rodriguez ... ... ... ... | 19° 40′ S. | 63° 30′ E. |

*Note.*—When the weather is cyclonic additional messages are issued when fresh information becomes available.

## INDIA, CEYLON AND BURMA.

### II.—Wireless Weather Bulletins.

The following W/T Stations transmit Weather Bulletins containing a brief summary of weather conditions and reports in code, giving actual observations at 8 a.m. local time from Indian and Ceylon stations; 0400 G.M.T. from Gulf of Oman and Mekran coast stations and 7 a.m. local time for Aden.

Station reports in International Ships Wireless Weather Telegraphy Code in three five-figure groups.

To decode these reports the tables given in M.O. 329 are required. The Key letters are fully described on p. 44 of the January, 1937, number, and in M.O. 329, with the exception of II. II = index figure of coast station, see Chart below.

Key letters—IICKW DDFww PPVTT.

| W/T Station. | Call Sign. | Wave-length, metres. | Position (approx.). | | Times of Trans-mission. | Area covered. |
|---|---|---|---|---|---|---|
| | | | Lati-tude. N. | Longi-tude. E. | | |
| **Bombay** | **VWB** | 1,000 I.C.W. | 19° 05′ | 72° 50′ | 0800 | Arabian Sea. |
| **Calcutta** | **VWC** | 2,000 C.W. | 22° 34′ | 88° 20′ | 0830 | Bay of Bengal. |
| **Matara** | **GZP** | 2,000 C.W. | 6° 01′ | 80° 36′ | 0630* | Arabian Sea, Bay of Bengal and Ceylon. |

* Information too late for inclusion in 0630 G.M.T. message is sent out at 0948 G.M.T.

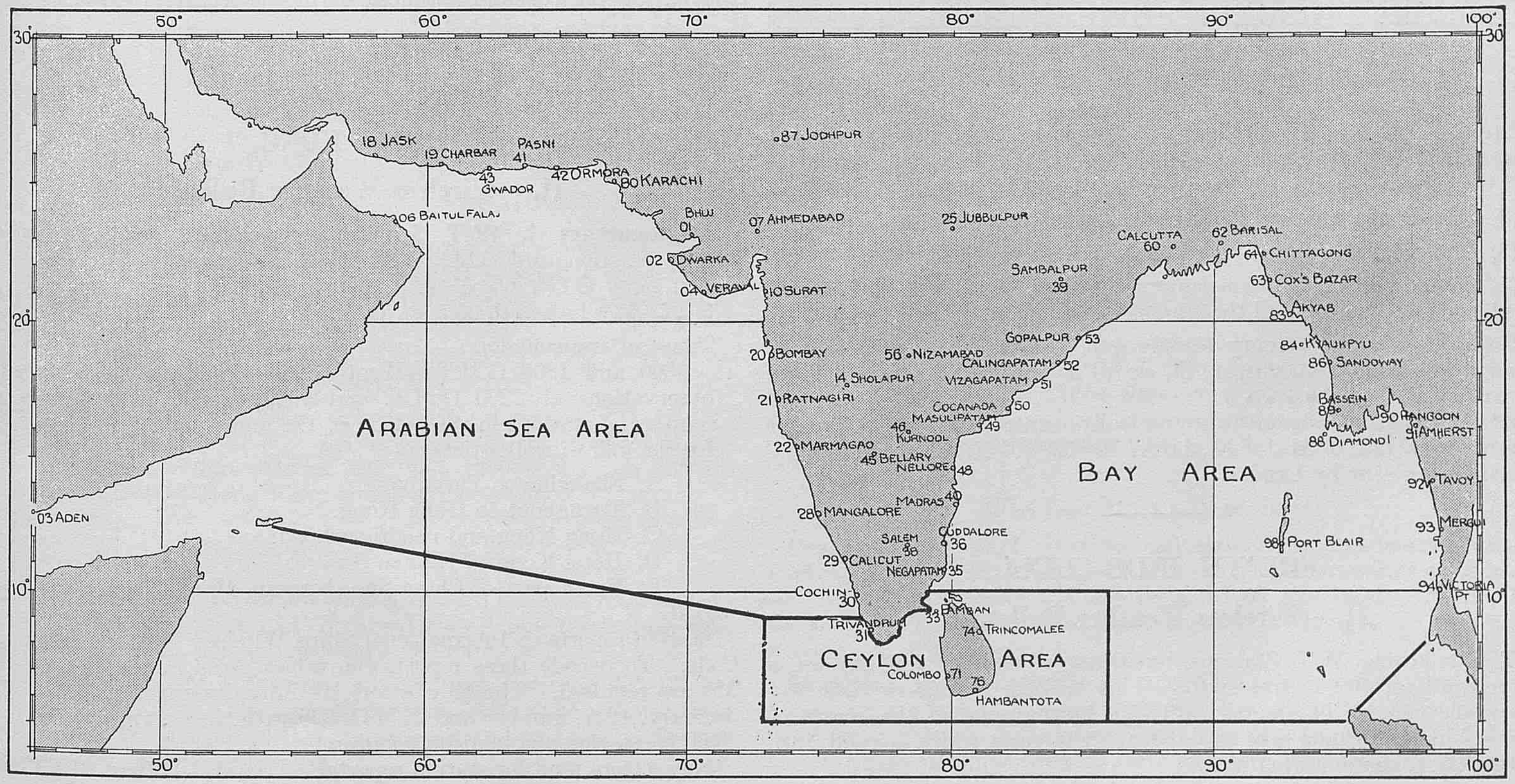
A brief summary of weather conditions is broadcast daily from stations below at the following times :—

| Time G.M.T. | Station. | Position (approx.). | | Call Sign. | Wavelength, metres. |
|---|---|---|---|---|---|
| | | Latitude. | Longitude. | | |
| 0830 and 1630 | **Karachi...** | 24° 51′ N | 67° 03′ E. | **VWK** | 1,550 (C.W.)† |
| | **Calcutta*** | 22° 34′ N. | 88° 20′ E. | **VWC** | 2,000 (C.W.) |
| 0800 and 1600 | **Bombay...** | 19° 05′ N. | 72° 50′ E. | **VWB** | 1,000 (spk.) |
| 0900 and 1700 | **Madras ...** | 12° 59′ N. | 80° 11′ E. | **VWM** | 1,000 (I.C.W.) |
| | **Rangoon** | 16° 46′ N. | 96° 12′ E. | **VTR** | 1,200 ,, |
| 0948 and 1748 | **Aden ...** | 12° 49′ N. | 45° 02′ E. | **GZQ** | 2,000 (C.W.) |
| | **Matara ...** | 6° 01′ N. | 80° 36′ E. | **GZP** | 2,000 ,, |
| 0600 1330 and 1700‡ | **Colombo** | 6° 55′ N. | 79° 53′ E. | **VPB** | 2,300 ,,<br>600 ,, |

* After the time signal.

† In the event of interruption on the wavelength of 1,550 m. the message will be broadcast on 600 m. (I.C.W.).

‡ 1700 G.M.T. message broadcast when necessary.



50°
60°
70°
80°
90°
100°
30°
20°
10°
18 JASK
19 CHARBAR
PASNI 41
43 GWADOR
42 ORMARA
80 KARACHI
06 BAITUL FALAJ
BHUJ 01
02 DWARKA
04 VERAVAL
10 SURAT
87 JODHPUR
07 AHMEDABAD
25 JUBBULPUR
CALCUTTA 60
62 BARISAL
64 CHITTAGONG
63 COX'S BAZAR
83 AKYAB
SAMBALPUR 39
GOPALPUR 53
CALINGAPATAM 52
VIZAGAPATAM 51
COCANADA 50
MASULIPATAM 49
56 NIZAMABAD
14 SHOLAPUR
20 BOMBAY
21 RATNAGIRI
22 MARMAGAO
46 KURNOOL
45 BELLARY
NELLORE 48
MADRAS 40
28 MANGALORE
SALEM 38
CUDDALORE 36
29 CALICUT
NEGAPATAM 35
COCHIN 30
TRIVANDRUM 31
33 PAMBAN
74 TRINCOMALEE
COLOMBO 71
76 HAMBANTOTA
84 KYAUKPYU
86 SANDOWAY
BASSEIN 89
90 RANGOON
91 AMHERST
88 DIAMOND I
92 TAVOY
93 MERGUI
94 VICTORIA PT
98 PORT BLAIR
03 ADEN
ARABIAN SEA AREA
BAY AREA
CEYLON AREA

### Wireless Storm Warnings.

The following stations broadcast messages containing cyclone warnings immediately on receipt from the Indian Meteorological Department and at the following times. Each transmission is preceded by the W/T Safety Signal — — — (TTT).

| | | | |
|---|---|---|---|
| **Karachi** | call sign | **VWK** | at 0030, 0430, 1230 and 2030 G.M.T. Wavelength 600 m. I.C.W. |
| **Calcutta** | ,, ,, | **VWC** | |
| **Bombay** | call sign | **VWB** | at 0000, 0400, 1200 and 2000 G.M.T. Wavelength 600 m. Spk. |
| **Madras** | call sign | **VWM** | at 0100, 0500, 1300 and 2100 G.M.T. Wavelength 600m. I.C.W. |
| **Rangoon** | ,, ,, | **VTR** | |
| **Aden** | call sign | **GZQ** | at 0148, 0548, 1348 and 2148 G.M.T. Wavelength 600 m. I.C.W. |
| **Matara** | ,, ,, | **GZP** | |

These Weather Bulletins and Storm Warnings give brief information of the prevailing weather conditions in the Bay of Bengal and Arabian Sea.

### III.—Wireless Time Signals.

| Station. | Call Sign. | Wave-length, metres. | G.M.T. of Time Signal. | System. |
|---|---|---|---|---|
| Calcutta. | | | | |
| Lat. 22° 33′ 31″ N. | **VWC** | 2,000 C.W. | 0827–0830 | *See* Figure 1. |
| Long. 88° 20′ 16″ E. | | | 1627–1630 | |
| Colombo. | | | | |
| Lat. 6° 55′ 14″ N. | **VPB** | 2,300 C.W. | 0557–0600 | *See* Figure 1. |
| Long. 79° 52′ 46″ E. | | 600 C.W. | 1327–1330 | |

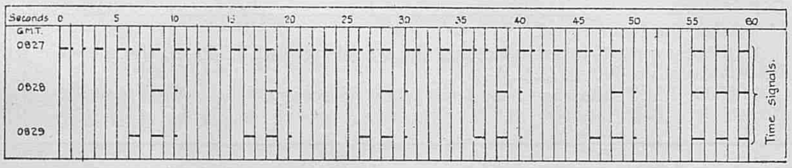


**Figure 1.**

Note.—*Calcutta.*—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, the words " Ordinary time signals," and the signal " Wait " ( • ▬ • • • ); all sent by hand.

(2) Signals automatically controlled from Alipore Observatory.

(3) Time Signal accurate to within 0·5 sec.

(4) Should there be any inaccuracy, the Time Signal will be followed by the " erase " signal and the words " signal failed."

*Colombo.*—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, CQ de VPB (repeated 3 times) " Time Signal, Wait " ( • ▬ • • • ).

(2) Actual time signals automatically controlled from Colombo Observatory (Lat. 6° 54′ 18″ N., Long. 79° 52′ 10″ E.), the preliminary signals being sent by hand.

## FRENCH INDO-CHINA.

### II.—Wireless Weather Bulletins.

The following W/T Stations broadcast a weather bulletin on a wavelength of 600 metres spark. This bulletin is sent *en clair* and gives the general barometric situation in the area off the coasts of Indo-China and China Sea, and a weather forecast which is valid until 0900 G.M.T. the following day.

| W/T Station. | Call Sign. | Position (approx.). Latitude. N. | Position (approx.). Longitude. E. | Times of Transmission. G.M.T. |
|---|---|---|---|---|
| Mitho ... ... | **FRM** | 10° 22′ | 106° 22′ | 1220 |
| Padaran ... ... | **FRR** | 11° 22′ | 109° 01′ | 1350 |
| Tourane ... ... | **FRT** | 16° 05′ | 108° 13′ | 1320 |
| Kien an ... ... | **FRK** | 20° 48′ | 106° 37′ | 1250 |
| Fort Bayard ... | **FRF** | 21° 12′ | 110° 24′ | 1350 |

## FORMOSA.

### II.—Wireless Weather Bulletins.

**Keelung W/T Station,** approximate Latitude 25° 08′ N., Longitude 121° 45′ E., call sign **JFK,** wavelength 600 metres, broadcasts a weather forecast, issued by Taihoku Meteorological Observatory, *en clair*, in English, at 0230 and 1920 G.M.T. The message is preceded by the signal CQ CQ CQ and contains the direction and force of the wind (Beaufort) and general weather conditions for the following day for the N. and E. coasts of Formosa and the Formosa Channel.

**Garanbi W/T Station,** approx. Latitude 21° 55′ N., Longitude 120° 51′ E., call sign **JFG** repeats the above forecast on 600 m. I.C.W. at 0300 and 2020 G.M.T.

*Example.—N.E. Monsoon moderate, cloudy, some rain, Northern and Eastern coast areas ; N.E. Monsoon strong, cloudy Formosa Channel.*

### Wireless Storm Warnings.

**Keelung W/T Station,** call sign **JFK,** wavelength 600 metres, at 0230 and 1920 G.M.T., broadcasts storm warnings *en clair* in English commencing CQ CQ CQ, giving date and hour of observation, type of storm, position of centre, direction of motion and brief remarks. The message may also contain information concerning strong winter monsoons whenever a sudden threatening change is anticipated off the N. and E. coast of Formosa or in the Formosa Channel.

## HONG KONG.

### II.—Wireless Weather Bulletins.

**Stonecutters I. W/T Station** approximate position Latitude 22° 19′ N., Longitude 114° 09′ E.

Call signs **GYP,** wavelength 2650 m. C.W. } simultaneously.
**GZO 6,** wavelength 35.5 m. C.W.

Times of transmission :—

0300 and 1200 G.M.T.—Weather reports in code giving actual observations at 2200 G.M.T. and 0600 G.M.T. respectively at a number of stations in the list on p. 119 and a brief Forecast *en clair* for the following Districts :—

A. Shanghai to Turnabout.
B. Turnabout to Hong Kong.
C. Hong Kong and neighbourhood.
D. Hong Kong to Hainan Straits.
E. North part of China Sea (between Hong Kong and latitude 16° N.).

Station reports in International Ships Wireless Weather Telegraphy Code. To decode these reports the tables given in the Decode M.O. 329 are required. The Key letters are fully described on p. 44 of the January, 1937, number and in M.O. 329 with the exception of III.

III = station distinguishing figures.

Key letters used for station reports :—IIIAW DDFww PPVTT.

*Observation Stations.*

| Code Letter. | Code No. | Station. | Position. | |
|---|---|---|---|---|
| | | | Latitude. | Longitude. |
| ZI | — | Chemulpo ... ... | 37° 26′ N. | 126° 37′ E. |
| — | 734 | Tientsin ... ... | 39° 09′ N. | 117° 09′ E. |
| — | 739 | Chefoo ... ... | 37° 33′ N. | 121° 30′ E. |
| NG | — | Nagasaki ... ... | 32° 44′ N. | 129° 52′ E. |
| NA | — | Oshima ... ... | 28° 23′ N. | 129° 30′ E. |
| — | 769 | Gutzlaff ... ... | 30° 48′ N. | 122° 10′ E. |
| — | 772 | Hankow ... ... | 30° 36′ N. | 114° 20′ E. |
| TT | — | Bonin I. ... ... | 27° 05′ N. | 142° 11′ E. |
| IS | — | Ishigakijima ... | 24° 20′ N. | 124° 10′ E. |
| — | 781 | Changsha ... ... | 28° 12′ N. | 112° 47′ E. |
| — | 803 | Amoy ... ... | 24° 28′ N. | 118° 05′ E. |
| TA | — | Taihoku ... ... | 25° 02′ N. | 121° 31′ E. |
| HO | — | Pescadores ... ... | 23° 32′ N. | 119° 33′ E. |
| — | 812 | Gap Rock ... ... | 21° 49′ N. | 113° 56′ E. |
| — | 814 | Pratas I. ... ... | 20° 40′ N. | 116° 47′ E. |
| — | 621 | Fu Line ... ... | 20° 48′ N. | 106° 38′ E. |
| — | 625 | Tourane ... ... | 16° 08′ N. | 108° 17′ E. |
| — | 620 | Cape St. Jacques ... | 10° 20′ N. | 107° 05′ E. |
| — | 850 | Basco ... ... | 20° 28′ N. | 121° 59′ E. |
| — | 864 | Manila ... ... | 14° 35′ N. | 120° 59′ E. |
| — | 890 | Surigao ... ... | 9° 48′ N. | 125° 29′ E. |
| GN | — | Yuensan ... ... | 39° 11′ N. | 127° 26′ E. |
| — | 744 | Tsingtao ... ... | 36° 03′ N. | 120° 20′ E. |
| ST | — | Quelpart ... ... | 33° 20′ N. | 126° 30′ E. |
| KA | — | Kagoshima ... | 31° 34′ N. | 130° 33′ E. |
| — | 763 | Nanking ... ... | 32° 07′ N. | 118° 47′ E. |
| — | 770 | Ichang ... ... | 30° 42′ N. | 111° 16′ E. |
| SN | — | Saipan ... ... | 15° 14′ N. | 145° 46′ E. |
| NH | — | Naha ... ... | 26° 13′ N. | 127° 41′ E. |
| — | 777 | Kiukiang ... ... | 29° 44′ N. | 116° 08′ E. |
| — | 801 | Foochow ... ... | 26° 03′ N. | 119° 39′ E. |
| KO | — | Koshun ... ... | 22° 00′ N. | 120° 45′ E. |
| — | 810 | Hong Kong ... | 22° 18′ N. | 114° 10′ E. |
| — | 989 | Fort Bayard ... | 21° 03′ N. | 110° 28′ E. |
| — | 638 | Dong Hoi ... ... | 17° 29′ N. | 106° 37′ E. |
| — | 639 | Padaran ... ... | 11° 21′ N. | 109° 01′ E. |
| — | 852 | Aparri ... ... | 18° 22′ N. | 121° 38′ E. |
| — | 887 | Iloilo ... ... | 10° 42′ N. | 122° 34′ E. |
| — | 807 | Canton ... ... | 23° 08′ N. | 113° 27′ E. |
| — | 811 | Macao ... ... | 22° 11′ N. | 113° 33′ E. |
| — | 806 | Swatoro ... ... | 23° 20′ N. | 116° 43′ E. |
| — | 874 | Legaspi ... ... | 13° 09′ N. | 123° 45′ E. |
| — | 873 | Guam ... ... | 13° 24′ N. | 144° 38′ E. |
| — | 893 | Yap. W. Carolines... | 9° 29′ N. | 138° 08′ E. |

**Cape d'Aguilar W/T Station,** approximate position Latitude 22° 13′ N., Longitude 114° 15′ E. Call sign **VPS,** repeats the forecast *en clair* given by **Stonecutters I. W/T** station on a wavelength of 600 m. I.C.W. at 0400 and 1200 G.M.T.

### Wireless Telephony, R/T Issues.

**Hong Kong, W/T Station,** approximate Latitude 22° 17′ N., Longitude 114° 09′ E., call sign **ZBW,** broadcasts by word of mouth weather reports and forecasts at 0500 and 1200 G.M.T. on 355 m. (R.T.) for the district Hong Kong and neighbourhood.

### Wireless Storm Warnings.

**Stonecutters I. W/T Station** call signs **GZP** on 2,650 metres C.W. and **GZO 6** on 35·5 metres I.C.W. broadcasts Typhoon warnings with the weather bulletins sent out at 0300 and 1200 G.M.T.

**Cape d'Aguilar W/T Station,** approximate Latitude 22° 13′ N., Longitude 114° 15′ E., call sign **VPS,** broadcasts typhoon warnings on 600 m. I.C.W. and 36 m. C.W., on receipt and at 18 minutes past each of the two subsequent hours.

### Wireless Telephony R/T Issues.

**Hong Kong W/T Station,** approximate Latitude 22° 17′ N., Longitude 114° 09′ E., call sign **ZBW,** wavelength 355 m. R/T, broadcasts by word of mouth typhoon warnings on receipt and at the two subsequent hours. When a typhoon is definitely threatening Hong Kong the warnings are sent as frequently as possible, usually at two hourly intervals.

## III.—Wireless Time Signals.

Wireless time signals controlled by the Royal Observatory, Hong Kong, are broadcast from **Cape d'Aguilar W/T Station,** Latitude 22° 12′ 39″ N., Longitude 114° 15′ 11″ E., call sign **VPS,** on wavelengths of 600 m. I.C.W. and 36 m. C.W. at the following times :—

| | G.M.T. | | | | | | |
|---|---|---|---|---|---|---|---|
| | h. | m. | s. | | h. | m. | s. |
| | 1 | 55 | 00 | to | 2 | 00 | 00 |
| and from | 12 | 55 | 00 | to | 13 | 00 | 00 |

The time signals consist of dots (▪ ▪ ▪ ▪ ▪ etc.) each of about 0·2 seconds duration, sent at every second, the 28th, 29th, 54th, 55th, 56th, 57th, 58th and 59th seconds being omitted for the purpose of identifying the signals.

Preliminary warning signals are transmitted between 1h. 53m. and 1h. 54m., and between 12h. 53m. and 12h. 54m., G.M.T., as follows :—" CQ de VPS. HK Time wait."

## CHINA.

## II.—Wireless Weather Bulletins.

**Pratas Island W/T Station,** approximately Latitude 20° 42′ N., Longitude 116° 43′ E., call sign **XPI,** broadcasts a daily weather Bulletin at :—

0330 G.M.T. (based upon 2200 G.M.T. observations) wavelength 600m. (spk.).

1100 G.M.T. ( „ „ 0600 „ „ ) wavelength 600m. (spk.).

0330 G.M.T. repeated on a wavelength of 1450m. and 24·5m. (C.W.)

1100 G.M.T. „ „ „ „ 47m. „

The Weather Bulletins are broadcast *en clair* in English and are preceded by CQ CQ CQ de XPI XPI XPI. They contain the following information :—

**Part I.** The location of high and low pressure areas.

**Part II.** Location and expected direction of movement of depression, or typhoon, affecting the China Sea, Eastern Sea, Yellow Sea, Japan Sea (including the Pacific Ocean to the eastward) or S.E. of the Philippine Islands extending northward from Guam and adjacent islands to Northern Japan.

**Part III.** Wind and weather forecast for South-east coast of China and northern portion of China Sea.

**Part IV.** Wind direction and force, visibility, state of sea, and state of the weather at Pratas Island during previous six hours.

**Shanghai W/T Station,** approximate Latitude 31° 13′ N., Longitude 121° 28′ E., call sign **FFZ,** broadcasts weather forecasts *en clair*, for China and the China Seas, on a wavelength of 600 metres and 36m. C.W. simultaneously, repeated immediately on 2100 meters (C.W.), at 0300, 0900, 1400 and 2000 G.M.T.

### Wireless Storm Warnings.

**Pratas Island W/T Station** call sign **XPI,** broadcasts typhoon warnings for the China Sea when necessary. The warnings are broadcast *en clair* in English and are preceded by the Safety Signal TTT (▬ ▬ ▬). They are issued as frequently as changes are observed. Wavelength, 600 metres.

**Shanghai W/T Station,** call sign **FFZ,** broadcasts typhoon and gale warnings, when necessary after the weather bulletins at 0300 (after Time Signal), 0900 (after Time Signal), 1400 and 2000 G.M.T. The warnings are broadcast *en clair* and give information concerning the position of the centres of typhoons or continental depressions, for China and the China Seas.

Wavelength 600 metres (I.C.W.), and 36m. C.W. simultaneously, repeated immediately on 2100 metres (C.W.).

The warnings are also broadcast at 0945 G.M.T. on a wavelength of 30·5 m. C.W.

### III.—Wireless Time Signals.

Wireless time signals controlled by Zikawei Observatory are broadcast by **Shanghai W/T Station,** Latitude 31° 13′ 16″ N., Longitude 121° 27′ 47″ E., call sign **FFZ,** on a wavelength of 600 metres, I.C.W. and **FFZI** on 36·5m. C.W. simultaneously after the general call (QST de FFZ) " Shanghai time signal ", in the following manner .—

| G.M.T. h. | m. | s. | | h. | m. | s. | Signal. |
|---|---|---|---|---|---|---|---|
| 2<br>8 | 55 | 00 | to | 2<br>8 | 56 | 45 | • • • ▬ • • • ▬ • • • ▬ |
| | 57 | 00 | ,, | | 57 | 50 | ▬ • • ▬ ▬ • • ▬ ▬ • • ▬ etc. |
| | 57 | 55 | ,, | | 58 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 58 | 08 | ,, | | 58 | 10 | ▬ • |
| | 58 | 18 | ,, | | 58 | 20 | ▬ • |
| | 58 | 28 | ,, | | 58 | 30 | ▬ • |
| | 58 | 38 | ,, | | 58 | 40 | ▬ • |
| | 58 | 48 | ,, | | 58 | 50 | ▬ • |
| | 58 | 55 | ,, | | 59 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |
| | 59 | 06 | ,, | | 59 | 10 | ▬ ▬ • |
| | 59 | 16 | ,, | | 59 | 20 | ▬ ▬ • |
| | 59 | 26 | ,, | | 59 | 30 | ▬ ▬ • |
| | 59 | 36 | ,, | | 59 | 40 | ▬ ▬ • |
| | 59 | 46 | ,, | | 59 | 50 | ▬ ▬ • |
| 2<br>8 | 59 | 55 | ,, | 3<br>9 | 00 | 00 | 55 56 57 58 59 60<br>• • • • • • *Time signal.* |

▬ = 1 sec.; • = 0·2 sec.

## JAPAN.

### II.—Wireless Storm Warnings.

The **Central Meteorological Observatory, Tokyo, W/T Station,** Latitude 35° 39′ N., Longitude 139° 45′ E., call sign, **JGA,** Okinawa Meteorological Observatory W/T Station, Latitude 26° 12′ N., Logitude 127° 39′ E., call sign, **JGH,** and KOBE MARINE OBERVATORY W/T STATION, Latitude 34° 41′ N., Longitude 135° 11′ E., call sign **JTJ,** broadcast storm warnings *en clair*, in English, after the weather bulletins. The warnings contain the following information :—approximate position of typhoon (or cyclone), the direction in which it is moving, or expected movement, or information concerning severe gales, or duration of monsoon, over Japan and the neighbouring seas.

**Tokyo, JGA.**
Time 0450, 1100 and 2300 G.M.T.
**Okinawa, JGH.**
Time 0020, 0620 and 1150 G.M.T.
**Kobe, JTJ.**
Time 0530, 1130 and 2330 G.M.T.
} Wavelength 4000 metres (C.W.).

In cases of urgency they will be broadcast immediately on 600 metres I.C.W. and repeated at the end of the next compulsory silent period.

## AUSTRALIA.

### II.—Wireless Weather Bulletins.

WEATHER reports and forecasts issued by the Commonwealth Meteorological Bureau are broadcast *en clair* by Australian W/T stations as follows, special reports and warnings being broadcast on 600 metres by the W/T Stations serving the area affected, when dangerous weather prevails or is expected.

#### Perth W/T Station.

Approximate, Latitude 32° 02′ S. Longitude 115° 50′ E.
Call sign **VIP.**
At 0448 and 1300 G.M.T., on a wavelength 600 metres (I.C.W.).
At 0300 G.M.T., on 2,400 metres (C.W.).

#### Geraldton W/T Station.

Approximate, Latitude 28° 47′ S. Longitude 114° 36′ E.
Call sign **VIN,** wavelength 670 metres.

At 0200 and 1200 G.M.T., Mondays to Fridays, inclusive. Saturdays 0200 G.M.T. only.

#### Broome W/T Station.

Approximate, Latitude 17° 58′ S. Longitude 122° 14′ E.
Call sign **VIO,** wavelength 600 metres.
Times of transmission 0300 and 1400 G.M.T. (Monday to Friday).

#### Wyndham W/T Station.

Approximate, Latitude 15° 27′ S. Longitude 128° 07′ E.
Call sign **VIW,** wavelength 720 metres (I.C.W.).

At 0130 and 1130 G.M.T., Mondays to Fridays, inclusive. Saturdays, 0130 only.

#### Darwin W/T Station.

Approximate, Latitude 12° 27′ S. Longitude 130° 50′ E.
Call sign **VID,** wavelength 600 metres.
Time of transmission, 0500 G.M.T.

#### Thursday Island W/T Station.

Approximate, Latitude 10° 35′ S. Longitude 142° 13′ E.

Call sign **VII,** wavelength 720 metres (I.C.W.). Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a forecast for the ensuing 24 hours upon application to the above W/T Station.

#### Cooktown W/T Station.

Approximate, Latitude 15° 28′ S. Longitude 145° 16′ E.
Call sign **VIC,** wavelength 760 metres.

Ships may obtain weather information similar to above (Thursday I.) upon application to Cooktown W/T Station.

#### Townsville W/T Station.

Approximate, Latitude 19° 16′ S. Longitude 146° 50′ E.
Call sign **VIT,** wavelength 600 metres (I.C.W.).

Time of transmission, 1100 G.M.T. (Sundays excepted from April 16th to December 16th).

#### Rockhampton W/T Station.

Approximate, Latitude 23° 24′ S. Longitude 150° 30′ E.
Call sign **VIR,** wavelength 720 metres.

Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a forecast for the ensuing 24 hours, upon application to the above W/T Station.

#### Brisbane W/T Station.

Approximate, Latitude 27° 26′ S. Longitude 153° 07′ E.
Call sign **VIB,** wavelength 600 metres (I.C.W.).

Times of transmission, 0200 G.M.T.; and 1200 G.M.T. (Sundays excepted, April 16th to December 16th).

#### Sydney, W/T Station.

Approximate, Latitude, 33° 46′ S. Longitude 151° 03′ E.
Call sign **VIS.**

Times of transmission, 0050, 0420 G.M.T.; 0650 G.M.T. (Sundays excepted); and 1035 G.M.T. on a wavelength of 600 metres and at 0200 G.M.T. on a wavelength of 2,400 metres (C.W.).

#### Richmond W/T Station.

Approximate, Latitude 33° 36′ S. Longitude 150° 46′ E.
Call sign **VJT,** wavelength 2,308 metres (C.W.)

Times of transmissions, 0050 G.M.T. (except Sundays) giving a forecast for waters adjacent to the East coast of the continent; 0400 G.M.T. giving forecast for Australian waters.

### Melbourne W/T Station.

Approximate, Latitude 37° 47′ S. Longitude 144° 52′ E.
Call sign **VIM,** wavelength 600 metres (I.C.W.).
Times of transmission, 0200 and 1100 G.M.T.

### Point Cook W/T Station.

Approximate, Latitude 37° 55′ S. Longtitude 144° 45′ E.
Call sign **VJS,** wavelength 2,308 metres (C.W.).

Times of transmissions, 0120 G.M.T. (except Sundays) giving forecast for the waters adjacent to the South-east coast of the continent; 0430 G.M.T. giving forecast for Australian waters.

### Hobart (Tasmania) W/T Station.

Approximate, Latitude 42° 52′ S. Longitude 147° 19′ E.
Call sign **VIH,** wavelength 720 metres (spark).

Ships may obtain a summary of 2300 G.M.T. coastal weather reports on application to the W/T Station, after about 0030 G.M.T., daily (Sundays excepted). A 24 hours' forecast may also be obtained on application after about 0330 G.M.T. The forecast issued on Saturdays is for the ensuing 48 hours.

### Adelaide W/T Station.

Approximate, Latitude 34° 51′ S. Longitude 138° 32′ E.
Call sign **VIA,** wavelength 600 metres (I.C.W.).
Times of transmission, 1130 and 1330 G.M.T.

### Esperance W/T Station.

Approximate, Latitude 33° 52′ S. Longitude 121° 54′ E.
Call sign **VIE.** wavelength 680 metres.

Times of transmission, 0300 and 1300 G.M.T., Mondays to Fridays inclusive; Saturdays at 0300 only.

## Wireless Storm Warnings.

Storm warnings are broadcast by the Australian W/T stations as follows :—

For approximate positions of the Stations *see* p. 120 and above.

**Perth,** call sign **VIP,** wavelengths 600 metres (I.C.W.) and 2400 metres (C.W.).

**Geraldton,** call sign **VIN,** wavelength 670 metres.
**Broome,** ,, **VIO,** ,, 600 ,,
**Wyndham,** ,, **VIW,** ,, 720 ,, (I.C.W.).
**Darwin,** ,, **VID,** ,, 600 ,,

The above W/T Stations broadcast special warnings of the approach of cyclonic storms of tropical origin, including information regarding barometric pressure at stations on the N.W. coast of W. Australia, immediately upon receipt from the Weather Bureau.

**Thursday Island,** call sign **VII,** wavelength 720 metres (I.C.W.).
**Cooktown,** ,, **VIC,** ,, 760 ,,
**Rockhampton,** ,, **VIR,** ,, 720 ,,
**Brisbane,** ,, **VIB,** ,, 600 ,, (I.C.W.).

The above W/T Stations broadcast special storm warnings, immediately upon receipt from the Weather Bureau, and thereafter during the regular W/T watches kept by coastal vessels until receipt of later information from Brisbane Weather Bureau.

Special storm warnings may also be obtained, if the information is available, upon application to any of the above W/T stations.

**Willis Islets,** call sign **VIQ,** wavelength 730 metres, broadcasts storm warnings during the months November to April inclusive.

**Sydney,** call sign **VIS,** wavelength 600 metres I.C.W., broadcasts special storm warnings, immediately on receipt. They are repeated at intervals until receipt of later information from the Weather Bureau.

**Melbourne,** call sign **VIM,** wavelength 600 metres (I.C.W.), broadcasts special storm warnings immediately on receipt from the Weather Bureau.

**Flinders Island,** call sign **VIL,** wavelength 740 metres (I.C.W.), broadcasts storm warnings immediately on receipt.

**King Island,** call sign **VZE,** wavelength 760 metres, broadcasts storm warnings immediately on receipt.

**Hobart (Tasmania),** call sign **VIH,** wavelength 720 metres, broadcasts special storm warnings, immediately on receipt from the Weather Bureau and at hourly intervals thereafter until 1000 G.M.T.

**Adelaide,** call sign **VIA,** wavelength 600 metres.

**Esperance,** ,, **VIE,** ,, 680 ,, broadcast special storm warnings immediately on receipt from the Weather Bureau.

## III.—Wireless Time Signals.

| Station. | Call Sign. | Wave-length (metres). | G.M.T. | System. |
|---|---|---|---|---|
| **Perth**<br>Lat. 32° 01′ 51″ S.<br>Long. 115° 49′ 31″ E. | VIP | 600<br>(I.C.W.). | 0057–0100<br>1257–1300 | (*See* Time Signal Figure, p. 118.) Controlled by Perth Observatory. |
| **Adelaide**<br>Lat. 34° 51′ 14″ S.<br>Long. 138° 31′ 55″ E. | VIA | 600<br>(I.C.W.). | 0027–0030<br>1227–1230 | (*See* Figure as above.) Transmitted automatically by the standard clock of the Adelaide Observatory. |

**Melbourne W/T Station,** Latitude 37° 46′ 56″ S., Longitude 144° 52′ 09″ E., call sign, **VIM,** wavelength 600 metres (I.C.W.).

Wireless time signals are broadcast from Melbourne W/T Station in accordance with the New International System of W/T time signals at the following times :—

| G.M.T. | | | | | | |
|---|---|---|---|---|---|---|
| h. | m. | s. | | h. | m. | s. |
| 1 | 57 | 00 | to | 2 | 00 | 00 |
| 13 | 57 | 00 | ,, | 14 | 00 | 00 |

The transmission of each series of signals is similar, the procedure being as follows :—

| G.M.T. h. | m. | s. | | h. | m. | s. | Signal. | |
|---|---|---|---|---|---|---|---|---|
| 1<br>13 | 57 | 00 | to | 1<br>13 | 57 | 50 | — • • — — • • — — • • — etc. | |
| | 57 | 55 | ,, | | 58 | 00 | 55 56 57 58 59 60<br>• • • • • • | *Time signal.* |
| | 58 | 08 | ,, | | 58 | 10 | — • | |
| | 58 | 18 | ,, | | 58 | 20 | — • | |
| | 58 | 28 | ,, | | 58 | 30 | — • | |
| | 58 | 38 | ,, | | 58 | 40 | — • | |
| | 58 | 48 | ,, | | 58 | 50 | — • | |
| | 58 | 55 | ,, | | 59 | 00 | 55 56 57 58 59 60<br>• • • • • • | *Time signal.* |
| | 59 | 06 | ,, | | 59 | 10 | — — • | |
| | 59 | 16 | ,, | | 59 | 20 | — — • | |
| | 59 | 26 | ,, | | 59 | 30 | — — • | |
| | 59 | 36 | ,, | | 59 | 40 | — — • | |
| | 59 | 46 | ,, | | 59 | 50 | — — • | |
| 1<br>13 | 59 | 55 | ,, | 2<br>14 | 00 | 00 | 55 56 57 58 59 60<br>• • • • • • | *Time signal.* |

## NEW ZEALAND.

### II.—Wireless Weather Bulletin.

**Wellington W/T Station,** Latitude 41° 16′ S. Longitude 174° 46′ E. Call sign **ZLW.**

Wavelength 779m. C.W. (385 kc/s.). Time of transmission 0930 G.M.T.

General statement of weather conditions for New Zealand waters.

Forecast for New Zealand, New Zealand Waters and the eastern Tasman Sea.

Weather Report in code giving actual observations at the stations below.

The International Ships Wireless Weather Telegraphy Code is used. To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages from ships [Fourth Edition], obtainable from His Majesty's Stationery Office, price 6d.).

The Key letters are fully described on page 44 of the January, 1937, number and in M.O. 329, with the exception of symbol III meaning the distinguishing figures of the coast stations.

Key letters IIIAS, DDFww, PPVTT.

| *Distinguishing Figures.* | *Station.* | *Position approx.* | |
|---|---|---|---|
| | | *Latitude.* | *Longitude.* |
| 495 | Norfolk Island ... | 29° 04′ S. | 167° 58′ E. |
| 505 | C. Maria Van Diemen | 34° 29′ S. | 172° 39′ E. |
| 510 | Auckland ... ... | 36° 51′ S. | 174° 47′ E. |
| 515 | East Cape ... ... | 37° 41′ S. | 178° 33′ E. |
| 520 | Cape Egmont... ... | 39° 17′ S. | 173° 45′ E. |
| 524 | Napier ... ... | 39° 29′ S. | 176° 56′ E. |
| 525 | Wanganui ... ... | 39° 52′ S. | 175° 05′ E. |
| 532 | Farewell Spit ... | 40° 33′ S. | 173° 01′ E. |
| 534 | Stephens I. ... ... | 40° 41′ S. | 174° 01′ E. |
| 537 | Wellington ... ... | 41° 16′ S. | 174° 46′ E. |
| 540 | Cape Campbell ... | 41° 43′ S. | 174° 17′ E. |
| 542 | Westport ... ... | 41° 27′ S. | 171° 37′ E. |
| 545 | Greymouth ... ... | 42° 27′ S. | 171° 12′ E. |
| 550 | Akaroa Lt. Ho. ... | 43° 48′ S. | 172° 59′ E. |
| 558 | Nugget Pt. ... ... | 46° 26′ S. | 169° 50′ E. |
| 565 | Puysegur Pt. ... | 46° 10′ S. | 166° 38′ E. |
| 570 | Chatham Is. ... ... | 43° 52′ S. | 176° 42′ E |
| 326 | Sydney ... ... | 33° 51′ S. | 151° 13′ E. |
| 394 | Hobart ... ... | 42° 53′ S. | 147° 20′ E. |
| 560 | Bluff* ... ... | 46° 37′ S. | 168° 21′ E. |
| 506 | Russell* ... ... | 35° 15′ S. | 174° 07′ E. |

* Stations may be added.

### III.—Wireless Time Signals.

**Wellington W/T Station** Latitude 41° 16′ 26″ S., Longitude 174° 45′ 55″ E., call sign **ZLW,** broadcasts time signals daily, on 600 metres (I.C.W.) as follows :—

The transmission is a relay of the time signal from Dominion Observatory, call sign ZMO, which is automatically operated by the Standard Time Clock at the Observatory (Latitude 41° 17′ 03·8″ S., Longitude 174° 46′ 00·0″ E.).

The first time signal is at 23 h. 00 m. 00 s., G.M.T., and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 23 h. 03 m. 00 s.

Each time signal commences exactly at the beginning of the minute and lasts for *three seconds,* approximately :—

| G.M.T. | | | | | | | Signal. |
|---|---|---|---|---|---|---|---|
| h. | m. | s. | | h. | m. | s. | |
| 22 | 58 | 00 | to | 22 | 58 | 55 | ▬ ZMO (every 15 seconds, the dash being of two seconds duration.) |
| 22 | 59 | 10 | ,, | 22 | 59 | 50 | ▬ ▬ • ▬ ▬ • ▬ ▬ • etc. |
| 23 | 00 | 00 | ,, | 23 | 00 | 03 | ━━━━━ Time signal. |
| 23 | 00 | 12 | ,, | 23 | 00 | 50 | ▬ ▬ ▬ ▬ ▬ ▬ ▬ etc. |
| 23 | 01 | 00 | ,, | 23 | 01 | 03 | ━━━━━ Time signal. |
| 23 | 01 | 13 | ,, | 23 | 01 | 50 | ▬ ▬  ▬ ▬  ▬ ▬ etc. |
| 23 | 02 | 00 | to | 23 | 02 | 03 | ━━━━━ Time signal. |
| 23 | 02 | 14 | ,, | 23 | 03 | 50 | ▬ ▬ ▬ ▬  ▬ ▬ ▬ ▬ etc. |
| 23 | 04 | 00 | ,, | 23 | 04 | 03 | ━━━━━ Time signal. |
| 23 | 04 | 09 | ,, | 23 | 04 | 50 | ▬ ▬ ▬ ▬ ▬  ▬ ▬ ▬ ▬ ▬ etc. |
| 23 | 05 | 00 | ,, | 23 | 05 | 03 | ━━━━━ Time signal. |

AR ZMO VA.

In addition to the above, the undermentioned time signals are broadcast on Tuesdays and Fridays, except on New Zealand Government holidays, by the Dominion Observatory, Wellington.

The conditions governing the transmission are similar to those given above.

The first time signal is at 9 h. 00 m. 00 s. (G.M.T.), and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 9 h. 03 m. 00 s. Each signal commences exactly at the beginning of the minute, and lasts for *three seconds,* approximately.

| G.M.T. | | | | | | | Signal. |
|---|---|---|---|---|---|---|---|
| h. | m. | s. | | h. | m. | s. | |
| 8 | 58 | 00 | to | 8 | 58 | 55 | ▬ ZMO (every 15 seconds, the dash being of two seconds duration.) |
| 8 | 59 | 10 | ,, | 8 | 59 | 50 | ▬ ▬ • ▬ ▬ • ▬ ▬ • ▬ ▬ • etc. |
| 9 | 00 | 00 | ,, | 9 | 00 | 03 | ━━━━━ Time signal. |
| 9 | 00 | 12 | ,, | 9 | 00 | 50 | ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ etc. |
| 9 | 01 | 00 | ,, | 9 | 01 | 03 | ━━━━━ Time signal. |
| 9 | 01 | 13 | ,, | 9 | 01 | 50 | ▬ ▬  ▬ ▬  ▬ ▬  ▬ ▬ etc. |
| 9 | 02 | 00 | ,, | 9 | 02 | 03 | ━━━━━ Time signal. |
| 9 | 02 | 14 | ,, | 9 | 03 | 50 | ▬ ▬ ▬ ▬  ▬ ▬ ▬ ▬ etc. |
| 9 | 04 | 00 | ,, | 9 | 04 | 03 | ━━━━━ Time signal. |
| 9 | 04 | 09 | ,, | 9 | 04 | 50 | ▬ ▬ ▬ ▬ ▬  ▬ ▬ ▬ ▬ ▬ etc. |
| 9 | 05 | 00 | ,, | 9 | 05 | 03 | ━━━━━ Time signal. |

AR ZMO VA

NOTE.—All hand Key signals, except in the 58th minute, terminate on the 50th second, to enable the observer to take the signals accurately. The hand signals must *not* be used as time signals.

## BRITISH NEW GUINEA (PAPUA).

### Wireless Storm Warnings.

**Port Moresby,** call sign **VIG,** wavelength 720 metres, broadcasts special warnings of disturbances on the Queensland coast immediately on receipt.

**Samarai,** call sign **VIJ,** wavelength 720 metres, broadcasts special storm warnings immediately on receipt and thereafter in the regular watches kept by coastal vessels, until further information is received from the Brisbane Weather Bureau.

Special storm warnings may also be obtained, if the information is available, upon application to the W/T stations.

## NEW BRITAIN.

### II.—Wireless Weather Bulletins.

**Rabaul (Bitapaka) W/T Station,** approximate, Latitude 4° 24′ S., Longitude 152° 19′ E.

Call sign **VJZ.** Wavelength 2,400 metres (I.C.W.).

At 0600 G.M.T., daily, broadcasts a weather report and an ocean forecast. Ships may also obtain this information on application to the W/T Station. From 16th April to 16th December, no forecast is broadcast on Sundays.

### Wireless Storm Warnings.

**Rabaul,** call sign **VJZ,** wavelength, 2,400 metres (C.W.) broadcasts special warnings of disturbances on the Queensland coast immediately on receipt.

## SOUTH PACIFIC OCEAN ISLANDS.

### II.—Wireless Weather Bulletins.

### Western Area.

**Suva (Fiji) W/T Station,** Latitude 18° 09′ S. Longitude 178° 28′ E. Call sign **VRP.**

Wavelength 800 m. I.C.W.

Times of transmission: 0005 G.M.T. (November 1st to April 30th).
0830 G.M.T.

From 1st November to 30th April the 0005 G.M.T. transmission contains observations taken at 2000 G.M.T. and the 0830 G.M.T. transmission contains observations taken at 0200 G.M.T.

From 1st May to 31st October, the 0830 G.M.T. transmission contains observations taken at 2000 G.M.T.

Weather report in code giving actual observations at the stations numbered 425, 426, 435, 443, 446, 447, 450, 451, 452, 453, 454, 455, 457, 458, 459, 460, 461 and 462 on the Chart below.

The International Ships Wireless Telegraphy Code is used.

To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages for ships [Fourth Edition], obtainable from His Majesty's Stationery Office, price 6d.)

The Key letters are fully described on page 44 of the January, 1937, number and in M.O. 329, with the exception of the symbol III which means the distinguishing figures of the coast stations.

Key letters IIICW DDFww PPVTT.

Barometer tendency is added "*en clair*" when necessary.

### Central and Eastern Areas.

**Apia (Samoa) W/T Station,** Latitude 13° 50′ S. Longitude 171° 50′ W. Call sign **ZMA.**

Wavelengths 800 m. I.C.W., 26 and 52 metres.

Times of transmission; 0100 G.M.T. (November 1st to April 30th).
0920 G.M.T.

From 1st November to 30th April the 0100 G.M.T. transmission contains observations taken at 2000 G.M.T. and the 0920 G.M.T. transmission contains observations taken at 0200 G.M.T.

From 1st May to 31st October the 0920 G.M.T. transmission contains observations taken at 2000 G.M.T.

Weather report in code giving actual observations at the stations numbered 439, 467, 473, 477 and 478 on the Chart below.

The Key and Code is the same as for Suva above.

A General statement of weather conditions in plain language is added when necessary and the various regions of the South Pacific will be referred to by the names shown on the chart below.

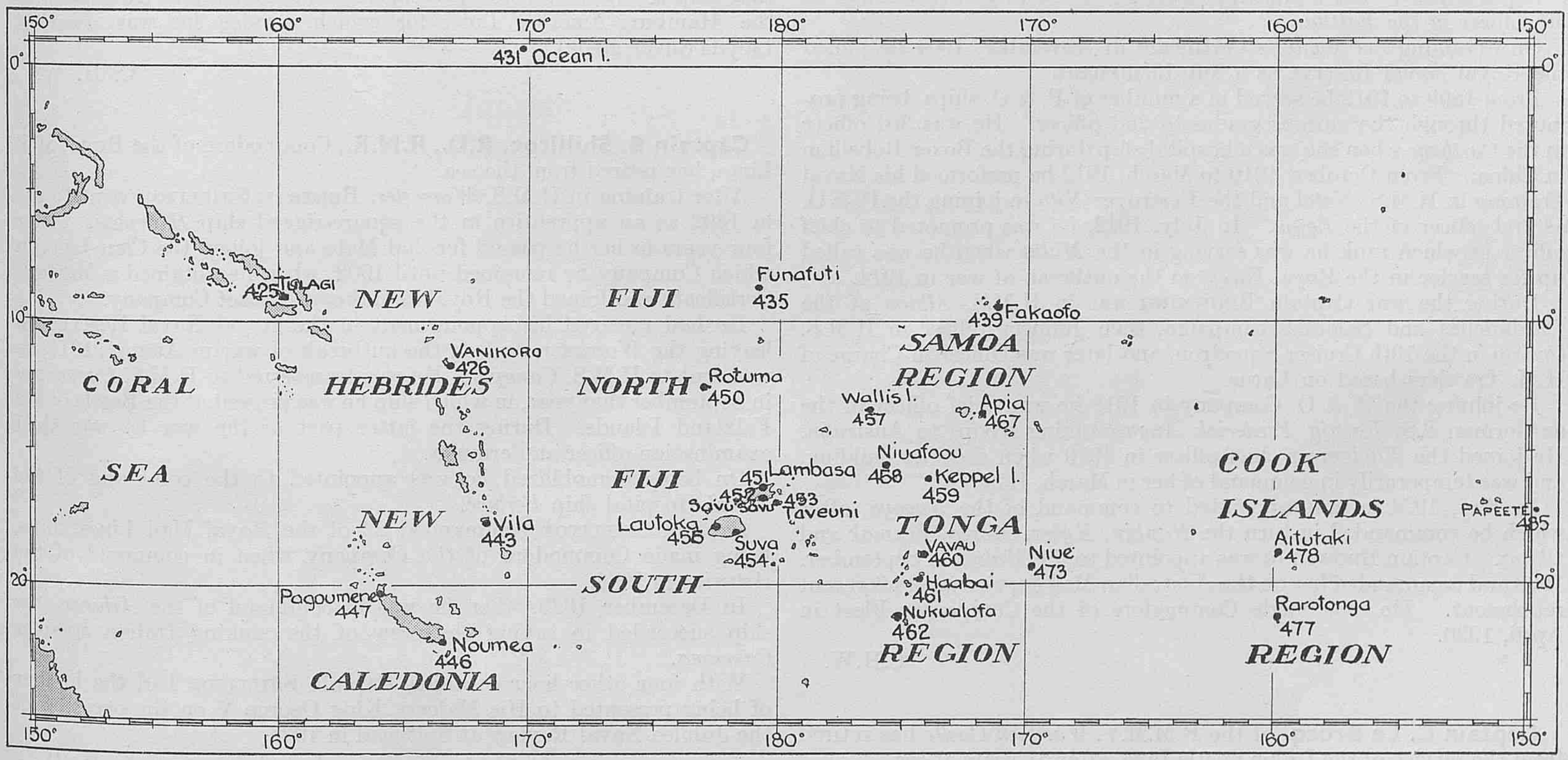
### Wireless Storm Warnings.

### During the Hurricane Season (November 1st to April 30th).

**Suva W/T Station** call sign **VRP** and **Apia W/T Station** call sign **ZMA** broadcast storm warnings when necessary on 800 m. I.C.W. immediately after the Weather reports explained above.

### French Oceania.

**Papeete (Tahiti),** approximate Latitude 17° 29′ S., Longitude 149° 29′ W., call sign **FPB,** broadcasts information concerning hurricanes, &c., at any hour when necessary on a wavelength of 600 metres (spark). The safety signal **TTT,** repeated at short intervals ten times on full power, is first sent out followed by the message which is repeated three times with intervals of ten minutes.


150°
160°
170°
180°
170°
160°
150°
0°
10°
20°
431 Ocean I.
Funafuti
435
425 TULAGI
NEW
HEBRIDES
VANIKORO
426
CORAL
SEA
FIJI
NORTH
Rotuma
450
FIJI
SAMOA
REGION
439 Fakaofo
Wallis I.
457
Apia
467
Niuafoou
458
Keppel I.
459
451 Lambasa
452
Savu Savu
453
Taveuni
Lautoka
455
Suva
454
Vila
443
NEW
CALEDONIA
Pagoumene
447
Noumea
446
SOUTH
TONGA
REGION
Vavau
460
Haabai
461
Nukualofa
462
Niue
473
COOK
ISLANDS
REGION
Papeete
465
Aitutaki
478
Rarotonga
477

# PERSONNEL.

*The Marine Superintendent will be glad to receive information of distinctions gained and retirements, &c., of Marine Observers.*

## PROMOTIONS AND AWARDS.

**Commodore Sir Charles G. Matheson, Kt., D.S.O., R.D., R.N.R.** On the occasion of his Coronation HIS MAJESTY THE KING was graciously pleased to confer a knighthood upon Commodore C. G. MATHESON, R.N.R., commander of the R.M.S. *Oronsay*, Commodore of the Orient Line. J.H.

**Captain F. W. Mace, O.B.E., R.N.R.,** Marine Surveyor to the Mersey Docks and Harbour Board has been made a Commander of the British Empire on the occasion of His Majesty's Coronation.

J. H.

## RETIREMENTS.

**Captain J. B. Browning, R.D., R.N.R.,** Commodore of the P. & O. S. N. Co., retired in April this year on reaching the age limit.

JOHN BARRANCE BROWNING first went to sea in June, 1894 as an apprentice in the Barque *Harold*, 1199 tons, owned by Messrs. Thomas Stephens of London, and employed in the Australian Trade.

He completed his apprenticeship in the same vessel and left her in November, 1898, when he passed for 2nd Mate, joining the P. & O. Company in January, 1899.

Captain BROWNING'S first appointment in the P. & O. Co., was as 5th officer in the *Valetta*.

On obtaining his Master's Certificate in November, 1904 he joined the Royal Naval Reserve as a Sub-Lieutenant.

From 1899 to 1912 he served in a number of P. & O. ships, being promoted through the various grades to 2nd officer. He was 3rd officer in the *Carthage* when she was a hospital ship during the Boxer Rebellion in China. From October, 1910 to March, 1912 he performed his Naval Training in H.M.S. *Natal* and the Destroyer *Nith* re-joining the P. & O. as 2nd officer of the *Egypt*. In July, 1912, he was promoted to chief officer in which rank he was serving in the *Malta* when he was called up for service in the Royal Navy on the outbreak of war in 1914.

During the war Captain BROWNING was in H.M.S. *Albion* at the Dardanelles and Salonika campaign, then gunnery officer in H.M.S. *Orvieto* in the 10th Cruiser Squadron, and later was Officer-in-Charge of H.M. Trawlers based on Larne.

Re-joining the P. & O. Company in 1918 he was chief officer of the ex-German S.S. *Koenig Frederick August* taking troops to Australia. He joined the *Naldera* as chief officer in 1919 when she was building, and was temporarily in command of her in March, 1924.

In May, 1924 he was appointed to command of the *Nagoya*, after which he commanded in turn the *Nankin*, *Kyber*, *Morea*, *Razmak* and *China*. Captain BROWNING was appointed to the *Maloja* in September, 1928 and commanded her on the Australian Mail Service until his recent retirement. He was made Commodore of the Company's Fleet in April, 1936.

C.H.W.

**Captain C. Le Brocq,** of the R.M.M.V. *Warwick Castle* has retired from the service of the Union Castle Line, after 51 years at sea.

CLARENCE LE BROCQ was born in the Channel Islands and first went to sea in the brigantine *Zingara* in 1886.

After serving in another sailing ship and in the Shire Line he joined the Union Castle Line in 1900 as 4th officer of the *Raglan Castle*.

He was appointed to his first command in 1925, since when he has commanded a number of the Company's ships, including the *Garth Castle*, *Llandaff Castle*, *Arundel Castle*, and *Balmoral Castle*.

In 1922 he was chief officer of the R.M.S. *Kinfauns Castle* when that ship took off over 400 passengers from the sinking *Hammonia* of the Hamburg-America Line, for which service he was awarded Lloyds Silver Medal.

C. H. W.

**Captain B. Shillitoe, R.D., R.N.R.,** Commodore of the Royal Mail Lines, has retired from the sea.

After training in H.M.S. *Worcester*, BERTRAM SHILLITOE went to sea in 1892 as an apprentice in the square-rigged ship *Hinemoa*. After four years in her he passed for 2nd Mate and joined the Clan Line, in which Company he remained until 1902, when he obtained a Master's Certificate and joined the Royal Mail Steam Packet Company.

He had received his appointment in the Royal Naval Reserve on leaving the *Worcester*, and on the outbreak of war in August, 1914, he was sent to H.M.S. *Canopus*. He was transferred to H.M.S. *Carnarvon* in September that year, in which ship he was present at the Battle of the Falkland Islands. During the latter part of the war he was chief examination officer at Bermuda.

On being demobilized he was appointed to the command of the Naval Hospital ship *Berbice*.

Captain SHILLITOE commanded 22 of the Royal Mail Lines ships, being made Commodore of the Company when in command of the *Asturias* in 1934.

In December, 1929, when he was in command of the *Arlanza*, the ship succeeded in saving the crew of the sinking Italian steamer *Casmona*.

With four other liner captains, Captain SHILLITOE had the honour of being presented to His Majesty King George V on the occasion of the Jubilee Naval Review at Spithead in 1935.

C. H. W.

# OBITUARY.

With deep regret we record the following :—

**Commander Alfred John Coad,** Royal Naval Reserve, formerly commodore of the Orient Line, died suddenly at the Lizard, Cornwall, on May 6th.

He commenced his sea career as an apprentice in the barque *Lanoma;* for a time he was 2nd Mate of the Ship *Hesperus* and joined the Orient Steam Navigation Company's service as 4th Officer of R.M.S. *Cuzco* on July 2nd, 1890. He gained command of *Cuzco* on June 29th, 1899, and commanded in turn most of the Orient Line ships, retiring in 1925. We knew him as our beau ideal of a Mail Ship Captain.

An account of his sea career may be found in Volume III No. 29 of this Journal.

L. A. B. S.

**Captain C. E. Mumford,** late Marine Superintendent of the Union Castle Mail Steamship Company, Ltd., died on May 10th. His retirement owing to ill-health was noted in this journal last January.

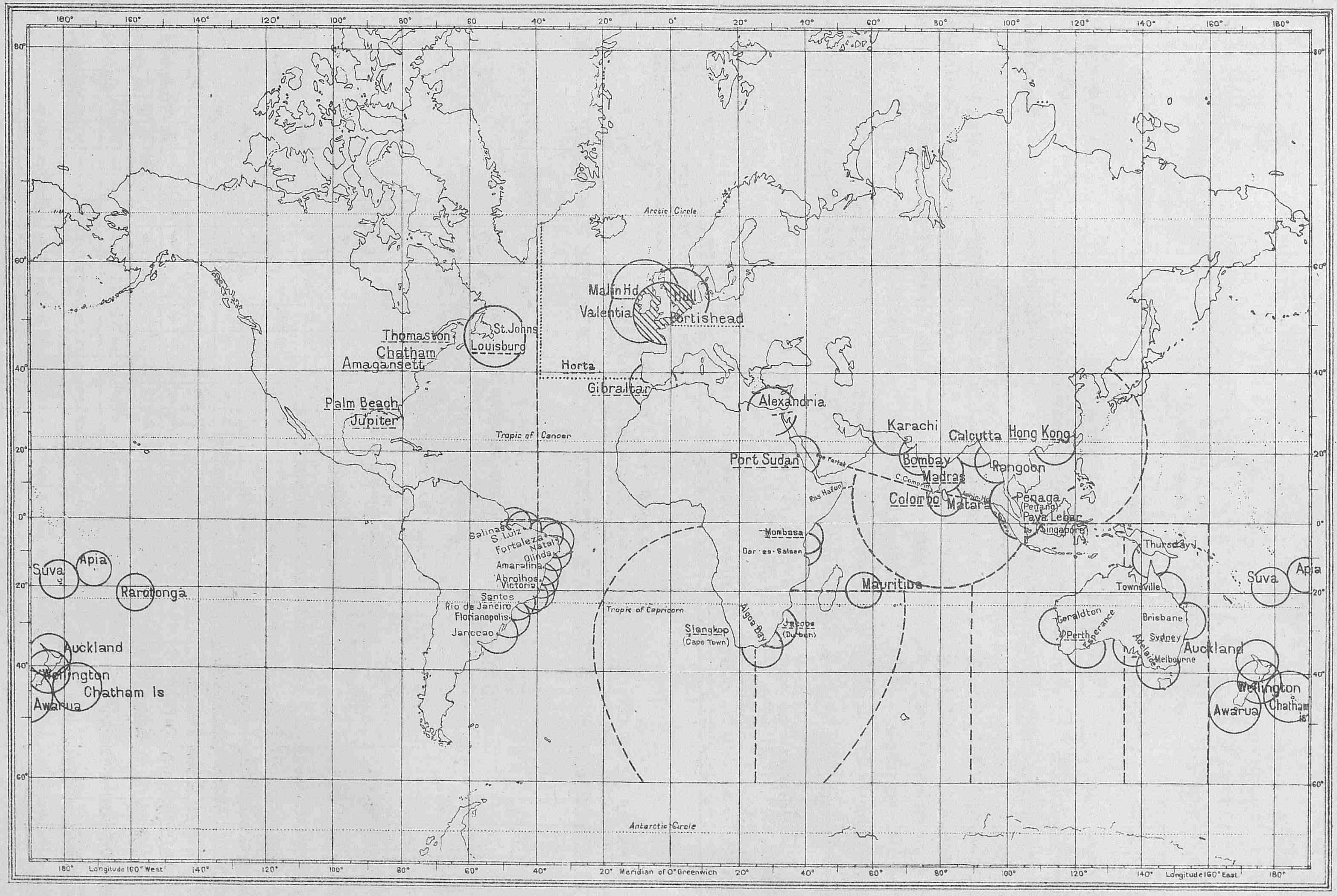
He joined the Union Steamship Company in 1897 at the age of 23, was appointed to his first command in 1918, and was made Marine Superintendent in 1925. Keenly interested in navigation, Captain Mumford some years ago wrote a most useful pamphlet entitled " What star is it ? " He also for a number of years worked out Tide Tables for Beira, Portuguese East Africa, which were published monthly in Beira.

C. H. W.

# SHIPS' WIRELESS WEATHER SIGNALS.

## CHART OF THE WORLD.

*Stations for Reception of Routine Wireless Weather Reports from "Selected Ships."*


180°
160°
140°
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100°
80°
60°
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20°
0°
80°
60°
40°
20°
0°
20°
40°
60°
Arctic Circle
Tropic of Cancer
Tropic of Capricorn
Antarctic Circle
Longitude 160° West
Meridian of 0° Greenwich
Longitude 160° East
Thomaston
Chatham
Amagansett
St. Johns
Louisburg
Palm Beach
Jupiter
Horta
Malin Hd.
Valentia
Hull
Portishead
Gibraltar
Alexandria
Port Sudan
Ras Fartak
Ras Hafun
Karachi
Bombay
Madras
C. Comorin
Colombo
Matara
Achin Hd.
Calcutta
Rangoon
Hong Kong
Penaga
(Penang)
Paya Lebar
Is. Singapore
Mombasa
Dar-es-Salaam
Mauritius
Slangkop
(Cape Town)
Algoa Bay
Jacobs
(Durban)
Salinas
S. Luiz
Fortaleza
Natal
Olinda
Amaralina
Abrolhos
Victoria
Santos
Rio de Janeiro
Florianopolis
Janceao
Suva
Apia
Rarotonga
Auckland
Wellington
Chatham Is
Awarua
Thursday I.
Townsville
Brisbane
Sydney
Geraldton
Perth
Esperance
Adelaide
Melbourne
Chatham Is.

The dotted line indicates the area in which British "A Selected Ships" report under control to Portishead

– – – – A pecked line indicates the reporting area round stations in other countries to which British "A Selected Ships" should report. The names of such stations being underlined with a pecked line.

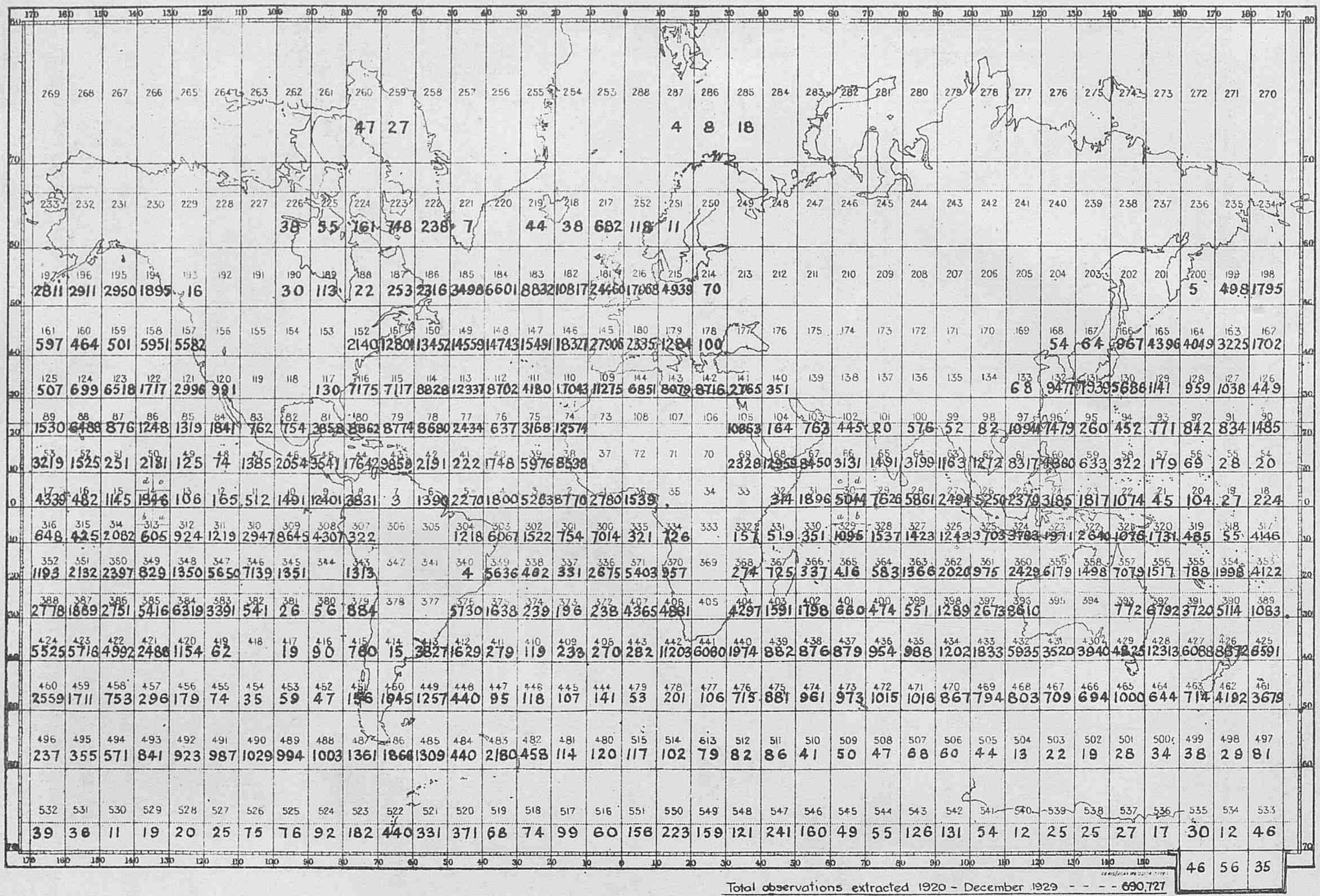
▨ The small shaded areas round stations detailed to receive reports from "A Selected Ships" indicate where these ships should not report on account of congestion.

○ The full circles indicate the areas round islands and coast stations which are detailed to intercept "B Selected Ships" reports made to C.O. on 600 metres

# WORK OF THE YEAR.

## MARSDEN CHART I.

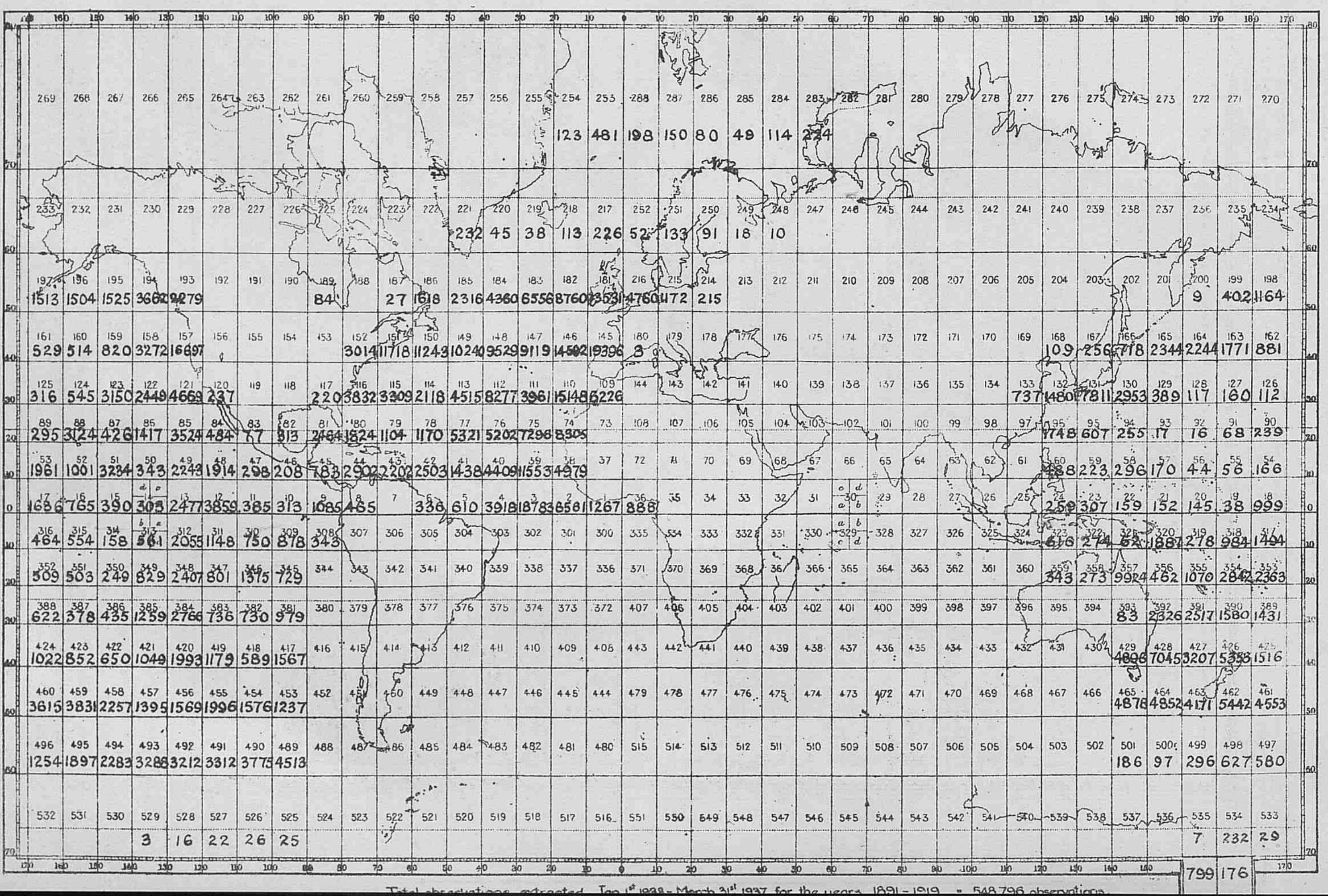
## SHOWING NUMBER OF SETS OF OBSERVATIONS EXTRACTED BETWEEN APRIL 1st. 1920 & MARCH 31st. 1937.



Total observations extracted 1920 - December 1929 - - - - 690,727
Total observations (new code) extracted Jan. 1st 1930 - Mar. 31st 1937 - 367,087
Grand total since 1st April 1920 - 1,057,814

## MARSDEN CHART II.

## NUMBER OF SETS OF OBSERVATIONS SHOWING REOVERY OF AREAS OF EXTRACTION OF OBSERVATIONS FROM LOGS RECEIVED PRIOR TO 1920 FOR NORTH ATLANTIC AND PACIFIC OCEANS.

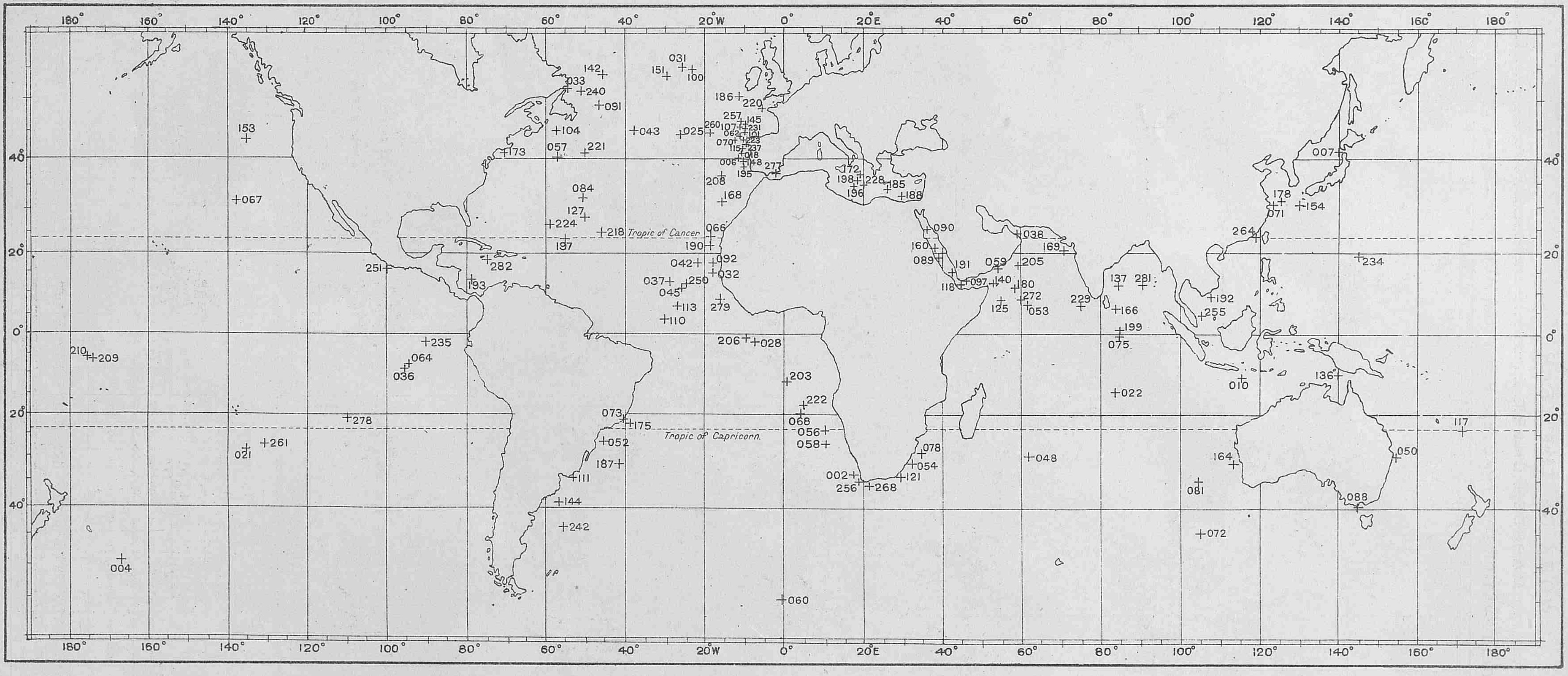


Total observations extracted Jan. 1st 1928 - March 31st 1937 for the years 1891 - 1919 = 548,796 observations.

# WORK OF THE YEAR.

## CHART III.

## CHART OF THE WORLD SHOWING POSITION OF BRITISH SELECTED SHIPS AT SEA ON JUNE 1ST., 1936.


180° 160° 140° 120° 100° 80° 60° 40° 20W 0° 20E 40° 60° 80° 100° 120° 140° 160° 180°
40° 20° 0° 20° 40°
Tropic of Cancer
Tropic of Capricorn
142
033
240
091
031
151
100
186
220
257
145
260
107
231
062
101
223
070
115
237
018
006
148
195
277
153
104
043
025
057
221
173
208
168
172
198
228
185
196
188
067
084
127
224
218
197
066
190
092
042
032
037
250
045
113
279
110
251
282
193
090
160
089
191
059
205
038
169
118
097
140
180
272
125
053
137
281
229
166
199
075
192
255
264
178
071
154
007
234
210
209
235
064
036
206
028
203
222
068
056
058
073
175
052
187
111
144
242
278
261
021
004
060
078
054
121
002
256
268
048
022
010
136
164
081
072
050
117
088

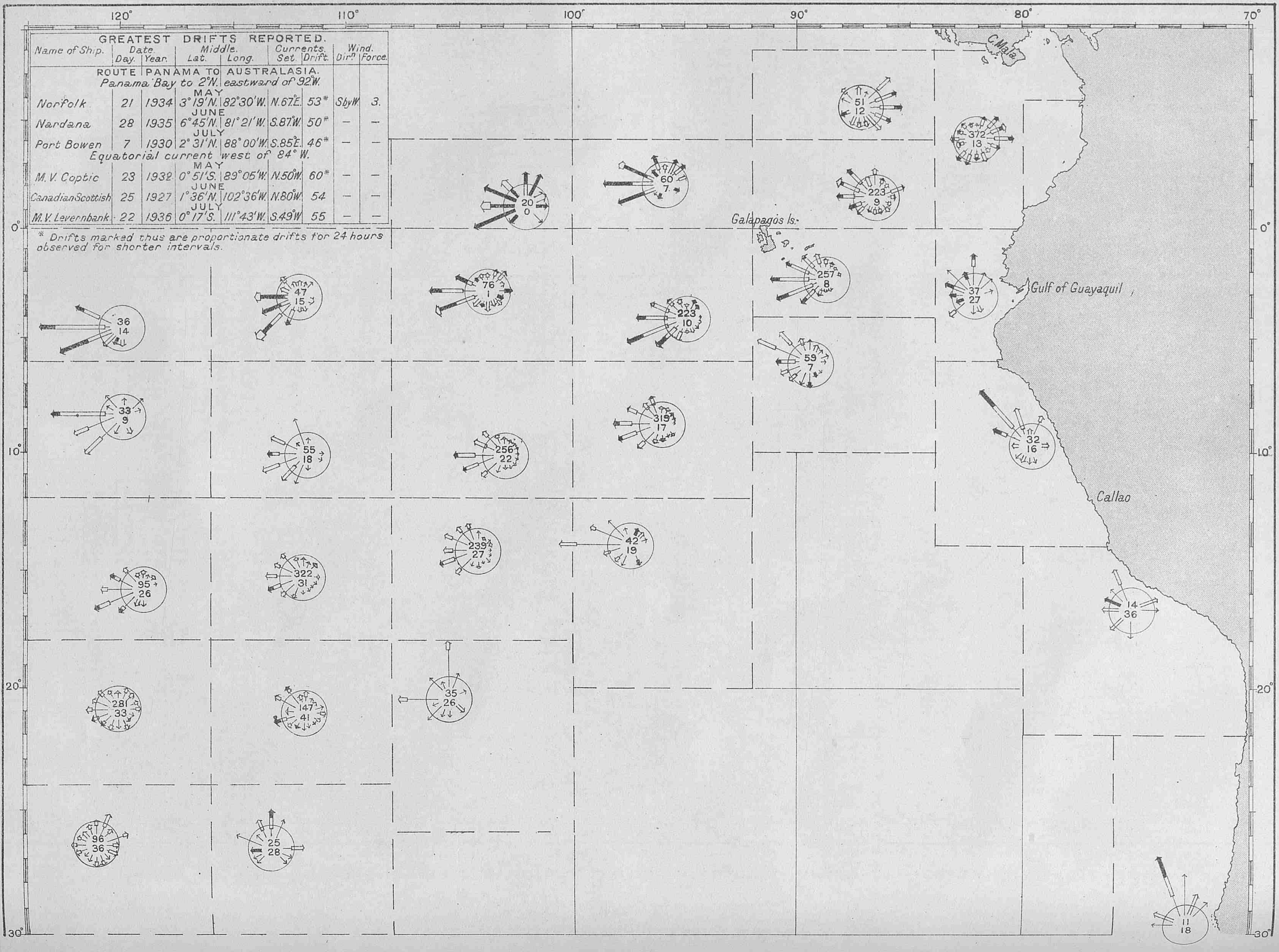
|  |  |
|---|---|
| 002B | Clan Macwhirter |
| 004A | Waipawa, M.V. |
| 006A | Andalucia Star |
| 007B | Bradfyne |
| 010B | Port Fremantle, M.V. |
| 018B | Makalla |
| 021A | Tamaroa |
| 022B | Alynbank, M.V. |
| 028A | Athlone Castle, M.V. |
| 031A | Caledonia |
| 032A | Alaunia |
| 033A | Empress of Australia |
| 036B | Cumberland |
| 037B | Baronesa |
| 038B | British Corporal |
| 042B | Maimoa |
| 043A | Berengaria |
| 045A | Avila Star |
| 048A | Themistocles |
| 050B | Clan Macalister |
| 052B | Dunster Grange, M.V. |
| 053B | Worcestershire, M.V. |
| 054B | British General |
| 056B | Westmoreland |
| 057A | Britannic, M.V. |
| 058B | Dorset, M.V. |
| 059A | Strathnaver |
| 060B | Discovery II R.R.S. |
| 062A | Lancastria |
| 064B | Durham, M.V. |
| 066A | City of Nagpur |
| 067B | Chinese Prince, M.V. |
| 068A | Balmoral Castle |
| 070A | Montcalm |
| 071A | Rawalpindi |
| 072B | Port Denison |
| 073B | Nagara |
| 075B | Hobson's Bay |
| 078B | Myrtlebank, M.V. |
| 081B | Tairoa |
| 084B | Lobos, M.V. |
| 088B | Tudor Star |
| 089B | City of Hereford |
| 090B | Aeneas. |
| 091A | Athenia |
| 092A | Carnarvon Castle, M.V. |
| 097A | Llangibby Castle, M.V. |
| 100A | Samaria |
| 101B | Clan Macfarlane |
| 104A | Tuscania |
| 107B | El Argentino, M.V. |
| 110B | El Uruguayo |
| 111B | Hardwicke Grange |
| 113B | Upwey Grange, M.V. |
| 115A | Arandora Star |
| 117B | Cape of Good Hope, M.V. |
| 118B | Clan Macindoe |
| 121B | Siamese Prince, M.V. |
| 125B | City of Windsor |
| 127B | Tuscan Star |
| 136B | Doric Star |
| 137B | Logician |
| 140B | Mahratta |
| 142A | Duchess of Atholl |
| 144B | Inverbank, M.V. |
| 145B | Berwickshire |
| 148A | Orford |
| 151A | Duchess of Richmond |
| 153A | Empress of Japan |
| 154A | Empress of Canada |
| 160B | Amarapoora |
| 164A | Mooltan |
| 166B | Agamemnon, M.V. |
| 168B | Clan Mactaggart |
| 169B | Dalgoma, M.V. |
| 172A | Orama |
| 173A | Franconia |
| 175A | Almanzora |
| 178B | Alipore |
| 180B | Baradine |
| 185A | Comorin |
| 186A | Georgic, M.V. |
| 187B | Coptic, M.V. |
| 188A | Kaisar-i-Hind |
| 190B | Port Chalmers |
| 191B | Chindwin |
| 192A | Chitral |
| 193A | Tainui |
| 195A | Maloja |
| 196A | Mulbera |
| 197B | Ingoma |
| 198B | Contractor |
| 199A | Mongolia |
| 203B | Royal Star |
| 205A | Rajputana |
| 206B | Karamea, M.V. |
| 208A | Winchester Castle, M.V. |
| 209A | Aorangi, M.V. |
| 210B | Niagara |
| 218B | Harmonides |
| 220A | City of Exeter |
| 221A | Tynefield, M,V. |
| 222B | Clan Macdougall, M.V. |
| 223A | Atlantis |
| 224A | Rangitane, M.V. |
| 228A | Ranchi |
| 229B | Tactician |
| 231A | Vandyck |
| 234B | Glaucus |
| 235A | Mataroa |
| 237A | Voltaire |
| 240B | Aurania |
| 242B | Tongariro |
| 250A | Highland Princess, M.V. |
| 251B | Levernbank, M.V. |
| 252B | Camito |
| 255B | Clan Macneil |
| 256B | City of Lyons |
| 257B | Natia |
| 260B | Inanda |
| 261B | Huntingdon |
| 264B | Tanda |
| 268B | Port Bowen |
| 272B | City of Singapore |
| 277A | Strathmore |
| 278B | Middlesex |
| 279B | Clan Urquhart |
| 281B | Kemmendine |
| 282B | City of Canton |

129 ships out of 285, in favourable positions to report, with about 156 in port or narrow waters. This is typical and represents a fair average. 45 per cent. in position to report.

# CURRENTS IN THE EASTERN PORTION OF THE SOUTH PACIFIC.

## MAY JUNE. and JULY.

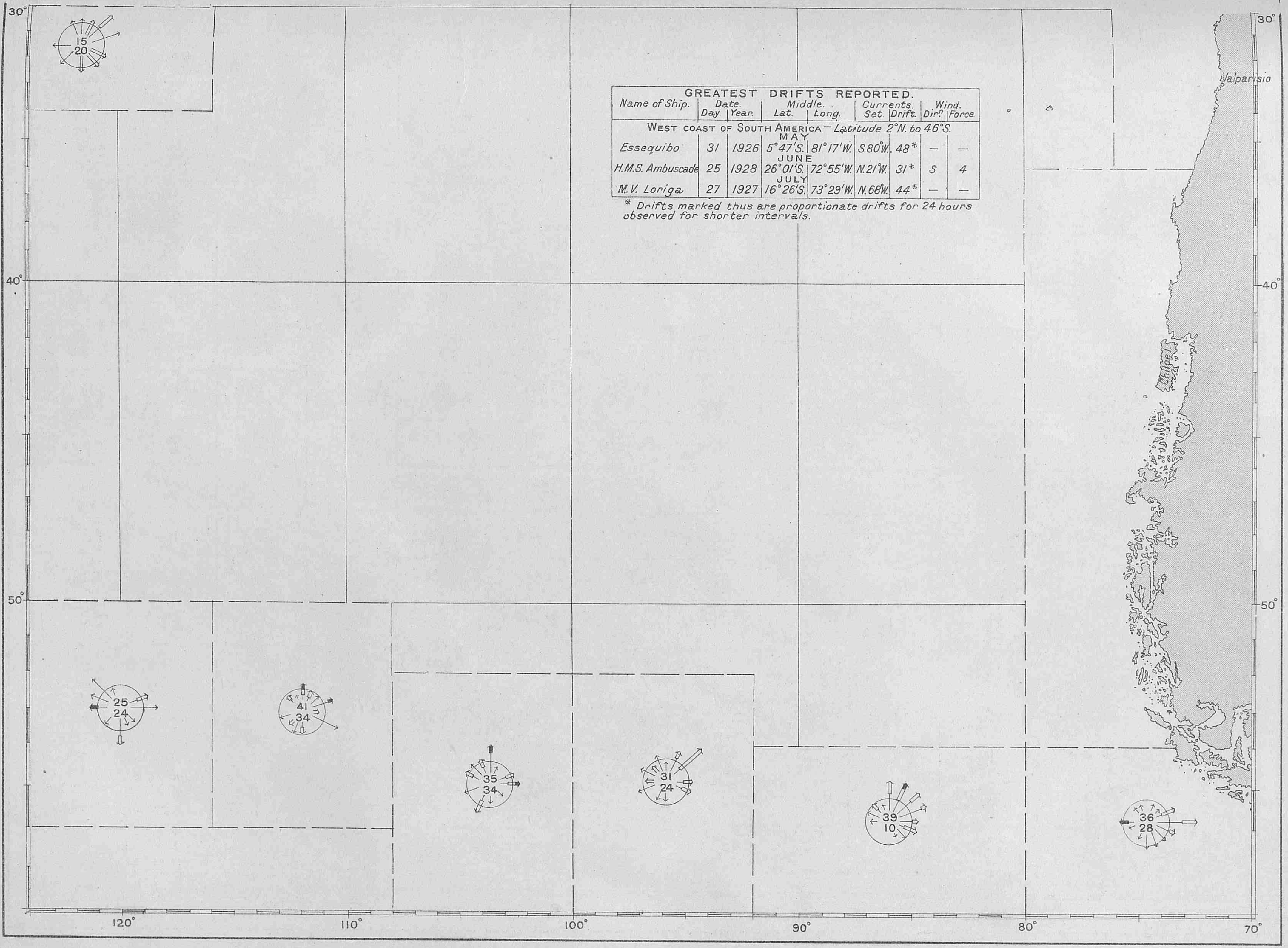
*Observations of ships regularly observing for the British Meteorological Office, 1910-1936.*


120°
110°
100°
90°
80°
70°
0°
10°
20°
30°
C. Mala
Galapagos Is.
Gulf of Guayaquil
Callao
51
12
372
13
60
7
223
9
20
0
257
8
37
27
76
1
47
15
223
10
36
14
59
7
33
9
319
17
32
16
55
18
256
22
239
27
42
19
322
31
95
26
14
36
35
26
281
33
147
41
96
36
25
28
11
18

GREATEST DRIFTS REPORTED.

| Name of Ship. | Date. Day. | Date. Year. | Middle. Lat. | Middle. Long. | Currents. Set. | Currents. Drift. | Wind. Dirⁿ | Wind. Force. |
|---|---|---|---|---|---|---|---|---|
| ROUTE PANAMA TO AUSTRALASIA. | | | | | | | | |
| Panama Bay to 2°N. eastward of 92°W. | | | | | | | | |
| | | | MAY | | | | | |
| Norfolk | 21 | 1934 | 3° 19′ N. | 82° 30′ W. | N. 67° E. | 53* | S by W. | 3. |
| | | | JUNE | | | | | |
| Nardana | 28 | 1935 | 6° 45′ N. | 81° 21′ W. | S. 87° W. | 50* | — | — |
| | | | JULY | | | | | |
| Port Bowen | 7 | 1930 | 2° 31′ N. | 88° 00′ W. | S. 85° E. | 46* | — | — |
| Equatorial current west of 84° W. | | | | | | | | |
| | | | MAY | | | | | |
| M. V. Coptic | 23 | 1932 | 0° 51′ S. | 89° 05′ W. | N. 50° W. | 60* | — | — |
| | | | JUNE | | | | | |
| Canadian Scottish | 25 | 1927 | 1° 36′ N. | 102° 36′ W. | N. 80° W. | 54 | — | — |
| | | | JULY | | | | | |
| M. V. Levernbank | 22 | 1936 | 0° 17′ S. | 111° 43′ W. | S. 49° W. | 55 | — | — |

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.



### GREATEST DRIFTS REPORTED.

| Name of Ship. | Date. |  | Middle. |  | Currents. |  | Wind. |  |
|---|---|---|---|---|---|---|---|---|
|  | Day. | Year. | Lat. | Long. | Set. | Drift. | Dirⁿ | Force. |
| West coast of South America – Latitude 2°N. to 46°S. |  |  |  |  |  |  |  |  |
|  |  |  | MAY |  |  |  |  |  |
| Essequibo | 31 | 1926 | 5°47'S. | 81°17'W. | S.80°W. | 48* | — | — |
|  |  |  | JUNE |  |  |  |  |  |
| H.M.S. Ambuscade | 25 | 1928 | 26°01'S. | 72°55'W. | N.21°W. | 31* | S | 4 |
|  |  |  | JULY |  |  |  |  |  |
| M.V. Loriga | 27 | 1927 | 16°26'S. | 73°29'W. | N.68°W. | 44* | — | — |

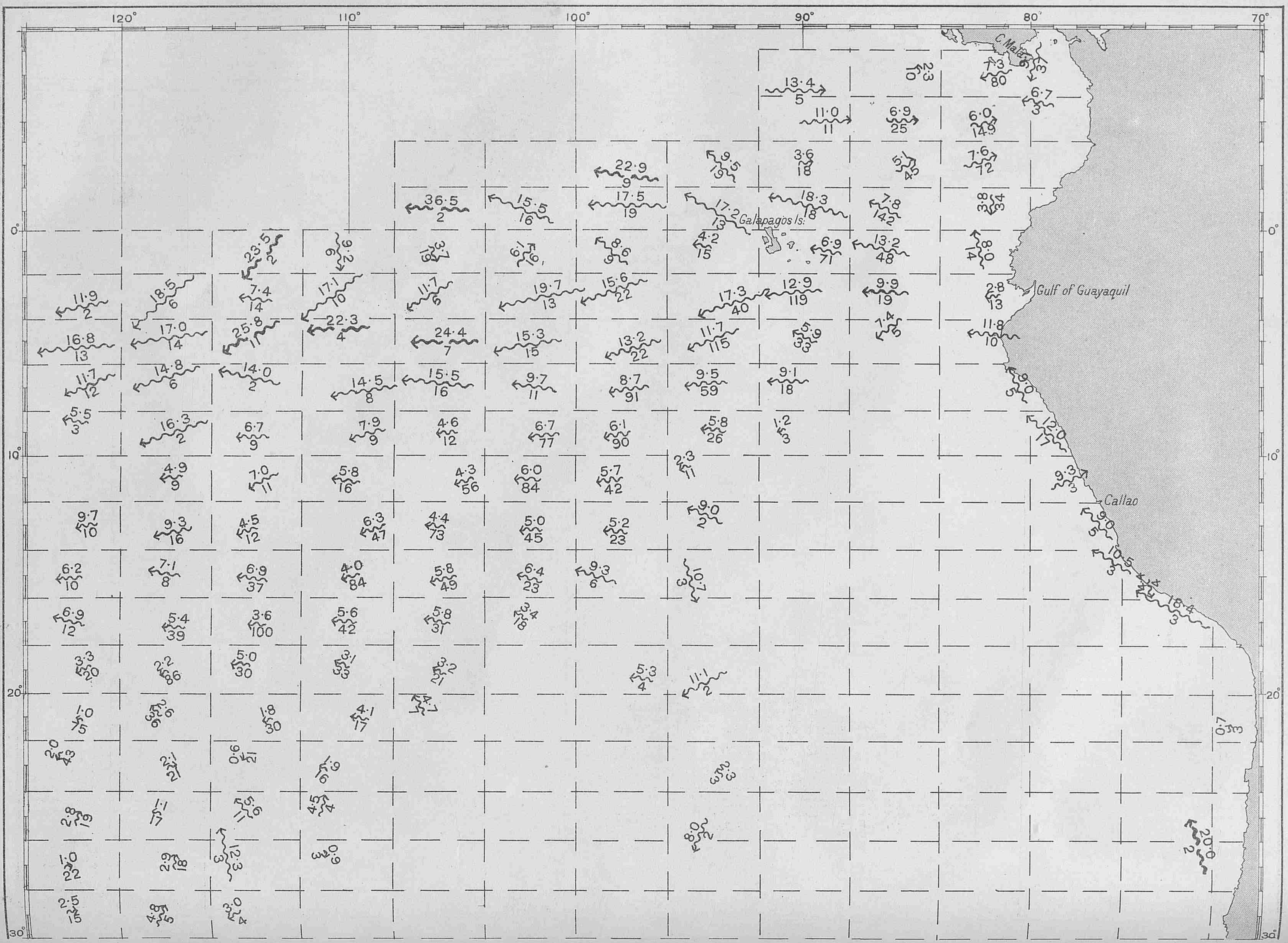
* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.

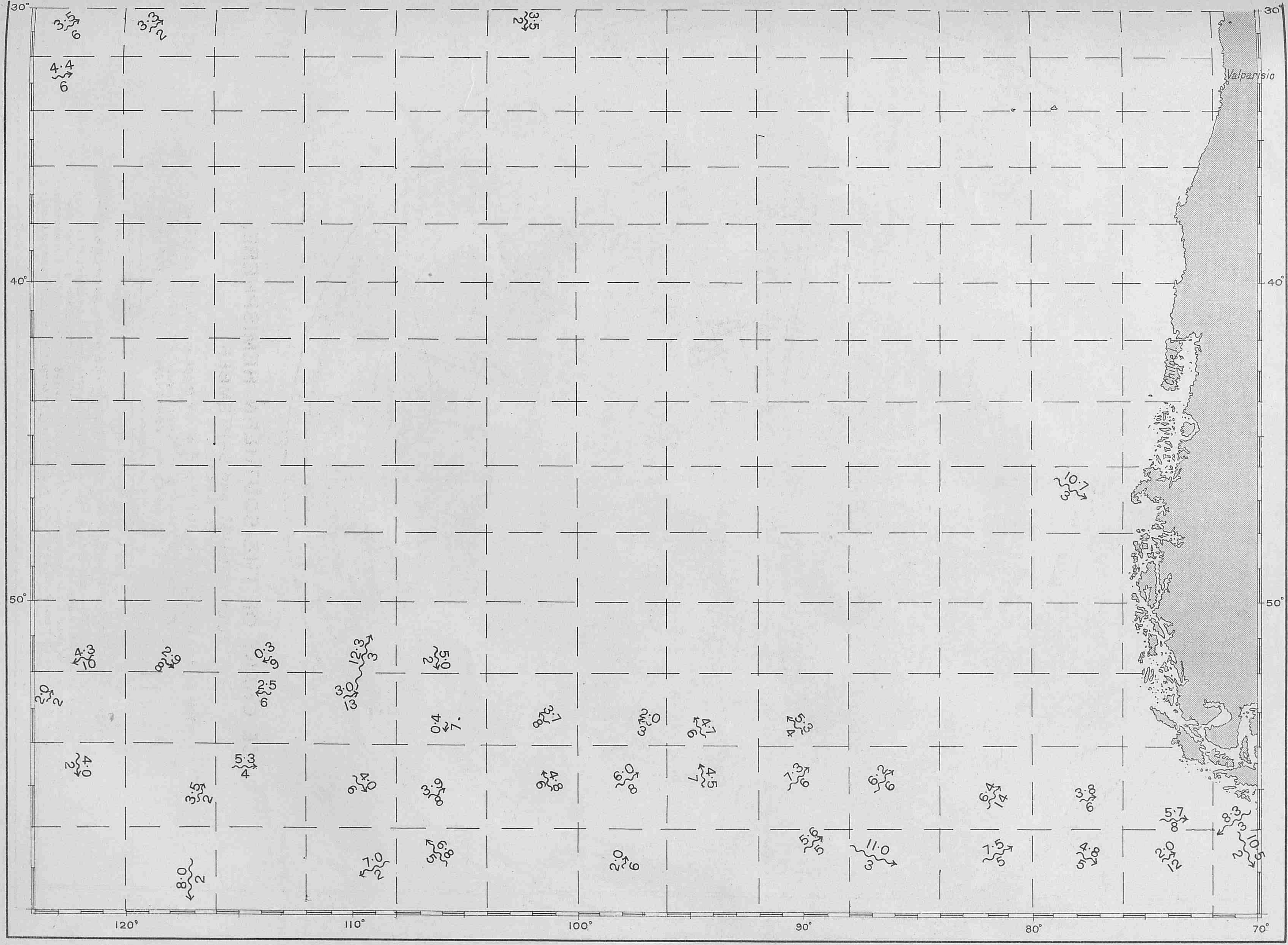
EXPLANATION OF CURRENT ROSES.

The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength, – 6-12 miles per day, ⟶, 13-24 miles per day ⟹,
Distance from tail of arrow to circle represents 5% Scale 0 10 20 30 40 50% 25-48 " " " ⟹, 49-72 " " " ⟹,
The upper figure in centre of rose gives total number of observations, the lower figure the percentage frequency of currents less than 6 miles per day. 73 miles per day and above ➡.

# CURRENTS IN THE EASTERN PORTION OF THE SOUTH PACIFIC.
## MAY JUNE. and JULY.

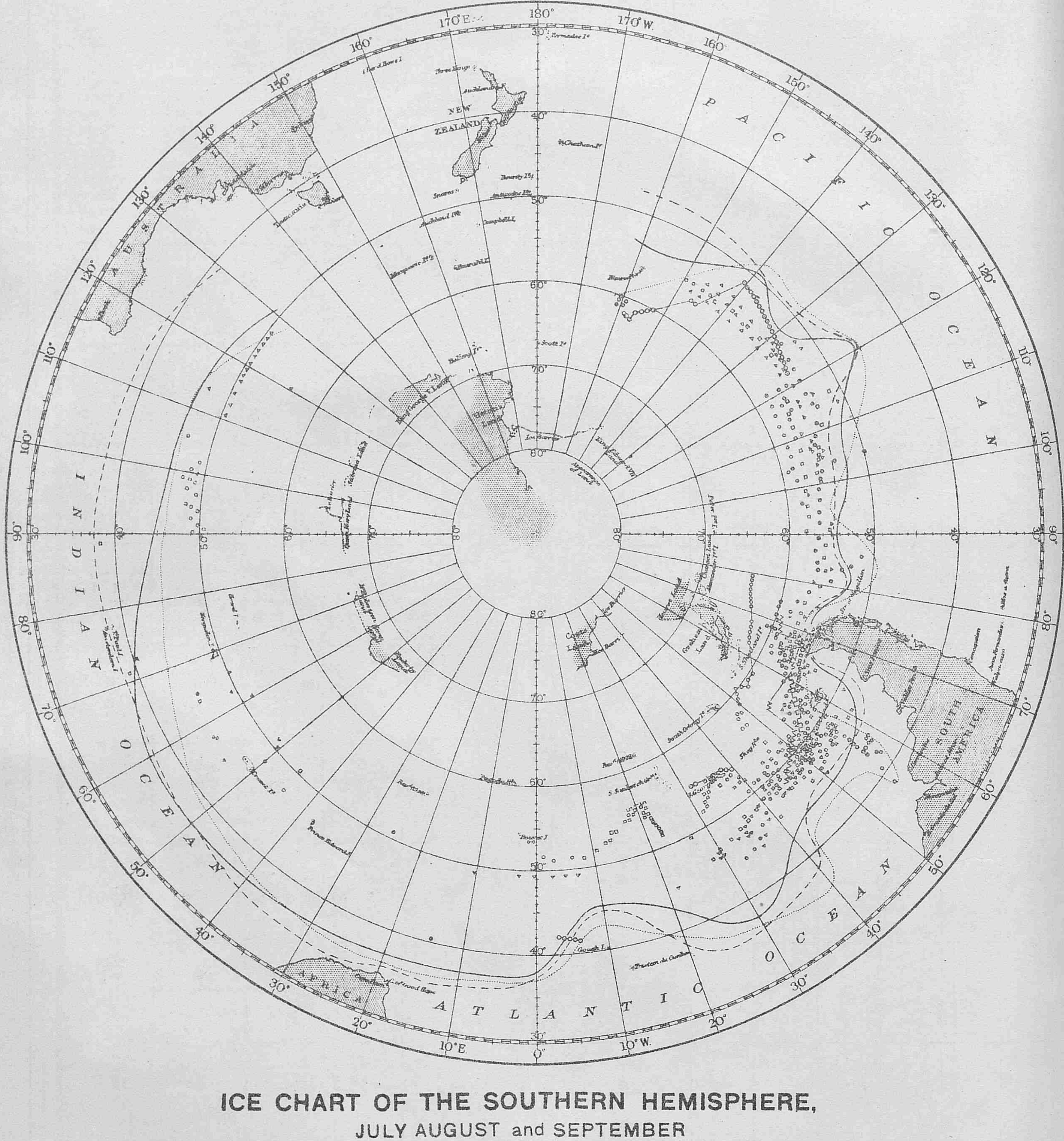
*Observations of ships regularly observing for the British Meteorological Office, 1910-1936.*


120°
110°
100°
90°
80°
70°
0°
10°
20°
30°
C. Mala
Galapagos Is.
Gulf of Guayaquil
Callao
2·3 10
7·3 80
6 31
13·4 5
6·7 3
11·0 11
6·9 25
6·0 149
22·9 9
9·5 19
3·6 18
5·1 45
7·6 72
36·5 2
15·5 16
17·5 19
17·2 13
18·3 18
7·8 142
3·8 34
23·5 2
9·2 6
3·7 19
6·1 16
8·6 9
4·2 15
6·9 71
13·2 48
8·0 14
11·9 2
18·5 6
7·4 14
17·1 10
11·7 6
19·7 13
15·6 22
17·3 40
12·9 119
9·9 19
2·8 13
16·8 13
17·0 14
25·8 11
22·3 4
24·4 7
15·3 15
13·2 22
11·7 115
5·9 33
7·4 5
11·8 10
11·7 12
14·8 6
14·0 2
14·5 8
15·5 16
9·7 11
8·7 91
9·5 59
9·1 18
9·0 5
5·5 3
16·3 2
6·7 9
7·9 9
4·6 12
6·7 77
6·1 90
5·8 26
1·2 3
12·0 17
4·9 9
7·0 11
5·8 16
4·3 56
6·0 84
5·7 42
2·3 11
9·3 3
9·7 10
9·3 16
4·5 12
6·3 47
4·4 73
5·0 45
5·2 23
9·0 2
9·0 5
6·2 10
7·1 8
6·9 37
4·0 84
5·8 49
6·4 23
9·3 6
10·7 3
10·5 3
1·4 2
6·9 12
5·4 39
3·6 100
5·6 42
5·8 31
3·4 18
18·4 3
3·3 20
2·2 86
5·0 30
3·1 33
3·2 21
5·3 4
11·1 2
1·0 75
2·6 36
1·8 30
4·1 17
4·7
0·7 3
2·0 43
2·1 21
0·6 21
1·9 6
2·3 3
2·8 19
1·1 17
5·6 11
4·5 4
1·0 22
2·9 18
12·3 3
0·9 3
8·0 2
20·0 2
2·5 15
4·8 5
3·0 4



EXPLANATION OF CURRENT ARROWS.

*The arrows flow with the current and represent the resultant of currents observed within the pecked lines. The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity of current in miles per day; the figures below the arrows the number of observations. In cases where the arrows drawn to scale are inconveniently long the symbol ~~→ is substituted.*


180°
170°E.
170°W.
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°E.
10°W.
0°
NEW ZEALAND
AUSTRALIA
P A C I F I C   O C E A N
I N D I A N   O C E A N
A T L A N T I C   O C E A N
SOUTH AMERICA
AFRICA
Chatham I.
Bounty Is.
Antipodes Is.
Snares
Auckland Is.
Campbell I.
Macquarie I.
Emerald I.
Scott I.
Balleny Is.
King George V. Land
Victoria Land
Ice Barrier
King Edward VII Land
Peter I.
Alexander I. Land
Graham Land
Coats Land
South Orkney Is.
South Shetland Is.
South Georgia
S. Sandwich Is.
Bouvet I.
Gough I.
Tristan da Cunha
Prince Edward Is.
Kerguelen I.
Heard I.
St. Paul I.
Amsterdam I.
Falkland Is.
Str. of Magellan
Cape Horn
Juan Fernandez
Cape Town

# ICE CHART OF THE SOUTHERN HEMISPHERE,

## JULY AUGUST and SEPTEMBER

### EXPLANATION.

The symbols used to distinguish the ice of each of the three months are as follows:–

| | *Bergs, 1902-1936* | *Position of northernmost pack ice actually observed 1885-1936.* | *Extreme limit of all ice, 1772-1936* |
|---|---|---|---|
| *July.* | △ | ∿∿∿∿∿∿∿∿∿∿ | ———————— |
| *August.* | □ | ⊓⊓⊓⊓⊓⊓⊓⊓⊓⊓ | — — — — — — |
| *September* | ○ | –○–○–○–○–○–○– | ........................ |

*Note — The symbols for pack ice are joined by hair line where desirable.*

*The coast line of the Antarctic continent as shown on this chart is not completely corrected to accord with the latest survey information. It is intended in a later volume of The Marine Observer, after the Admiralty Ice chart of the Southern Hemisphere No. 1241 has been revised, to again publish this chart in The Marine Observer with coast lines as complete as possible and to bring the ice information up to date annually.*

*H. M. Stationery Office Press, Kingsway, W.C.2.*

*Ps. 401/3287. Wt. 19A. D.20. Gp. 908. 1225. 6/3*

# MARINE METEOROLOGY.

## Co-operation of Shipowners, Masters and Mates.

Captains and Officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officer or Agent, a list of whom, with addresses, is given below.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for certain "Selected Ships" to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Arrangements are also made for a limited number of ships to keep meteorological logs in certain trades for the purpose of completing the meteorological survey of the oceans.

Ships regularly performing these voluntary duties are known as Observing Ships; the whole as the Voluntary Observing Fleet; and the commanders and officers of these ships as the Corps of Voluntary Marine Observers.

At present the observing fleet is limited to a number not exceeding 360 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

The observing fleet list indicating which are "Selected Ships," with the names of commanders, officers, and other particulars, is published in THE MARINE OBSERVER and kept up to date monthly.

The Organization of Voluntary Meteorological Observation at sea is described in Chapter VII of THE MARINE OBSERVER'S HANDBOOK, sixth edition.

THE QUARTERLY MARINE OBSERVER or MONTHLY SUPPLEMENT is sent regularly to the captain of every observing ship, for the information and guidance of his observing officers, and in the case of "Selected Ships," the wireless operators also. The Captains of observing ships are also supplied on request with charts, and atlases, according to trade, if available, as meteorological equipment.

To ensure the accuracy of data collected for the purpose of research and for weather forecasting, ashore and afloat, and to provide a pattern which may be copied with advantage to all concerned for general use in merchant ships, sufficient tested instruments are lent by the Meteorological Office to the Captains of observing ships.

The commanders of observing ships keeping the meteorological log are requested to return it (accompanied by Form 138 in the case of "Selected Ships") through the appropriate Port Meteorological Officer or Agent at intervals of not more than five months.

Commanders of observing ships keeping Forms 911 are requested to return them (accompanied by Form 138 in the case of "Selected Ships") by post direct to the Meteorological Office, London, at the end of each voyage, or at intervals of not more than two months.

These forms have the address and "On His Majesty's Service" printed upon them, and should be folded for posting accordingly.

The Port Meteorological Officers and Merchant Navy Agents inspect instruments in Meteorological log ships half-yearly, and in "Selected Ships" quarterly, when possible; and they will replace as necessary any gear lent by the Meteorological Office. These officers will also check the accuracy of barometers, etc., in observing ships, but marine observers should themselves frequently check by comparison.

The work of the British observing fleet, that of the observing fleets of other nations party to the Convention for Safety of Life at Sea, together with Weather Shipping Bulletins and Gale and Hurricane Warnings conforming to the International Convention for Safety of Life at Sea, provide the necessary information for shipping. Thus a world wide service for all shipping, at the minimum cost to national funds, is provided. Shipowners are asked to facilitate this voluntary work which is done by the commanders and officers of their ships.

Shipowners will greatly assist by facilitating the forwarding of postal matter from the Air Ministry addressed to the Captains of ships.

The masters of all British ships fitted with wireless telegraphy are asked to assist in this service in aid of navigation by making routine wireless weather reports in accordance with the Selected Ship scheme where and when there are not Selected Ships carrying out the service. As far as possible the Merchant Navy Agents will visit British foreign going ships registered in Great Britain and Northern Ireland, and give assistance and advice if desired.

This supplementary service to that of Selected Ships is particularly desirable in the regions and seasons of tropical revolving storms, and at present on the more northern routes across the North Atlantic and in far northern waters.

A pamphlet entitled "Decode for use with the International Code for Wireless Weather Messages from Ships", M.O. 329, Fourth Edition, can be obtained from H.M. Stationery Office. This gives a description of the world wide system of voluntary Selected Ships routine wireless weather telegraphy, the Tables for decoding reports received from Selected Ships, and notes for the guidance of the masters of British ships.

"A Handbook of Weather, Currents and Ice for Seamen" published by H.M. Stationery Office, may be obtained from the Stationery Office or through any bookseller, price 4s. This provides information of the elements named, the Laws of Storms, and gives guidance for weather forecasting at sea. It also gives some information of Ocean Pilotage and is intended as a guide for making use of the services specified in Article 35 of the Convention for Safety of Life at Sea.

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## NAUTICAL OFFICERS AND AGENTS OF THE MARINE DIVISION OF THE METEOROLOGICAL OFFICE, AIR MINISTRY.

**LONDON** ... ... Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent.
Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant.
Room 117A, Adastral House, Kingsway, W.C.2.
(*Telephone No.: Holborn 3434 Extension 421*).
Nearest station, Temple, District Railway.

**THAMES** ... ... Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (*Telephone No.: Albert Dock 2659. Telegraphic Address: Barometric Aldock, London*).

**MERSEY** ... ... Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (*Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool*).

### Agents.

**BRISTOL CHANNEL** Captain EDWARD HALL, 21, Dowlais Buildings, West Bute Street, Cardiff. (*Telephone No.: Cardiff 1268*).

### Agents (*contd.*).

**CLYDE** ... ... Captain W. HENDERSON, 80, Buchanan Street, Glasgow, C.1. (*Telephone No.: Central 3775*).

**FORTH** ... ... Captain G. MORE, Chief Dock Master's Office. Leith. (*Telephone No.: Leith 35481*).

**HONG KONG,** China. Lieut. Commander M. V. KEOGH, R.N., Chart Depot, H.M. Dockyard. (*Telephone No.: 108 Dockyard*).

**HUMBER** ... ... W. H. CARR, Esq., Master Mariner, Ferensway Chambers, Ferensway, Hull. (*Telephone No.: Hull 16063.*)

**SOUTHAMPTON** Captain Sir BENJAMIN CHAVE, K.B.E. Room 35, Royal Mail House.

**SYDNEY,** New South Wales. Captain N. G. ROSKRUGE.
Captain G. B. MERCER.
Customs House. (*Telephone No.: B6421*).

**TYNE** ... ... Captain F. B. WEST, Customs House Chambers, Quayside, Newcastle upon Tyne, 1. (*Telephone No.: Newcastle 23203*).

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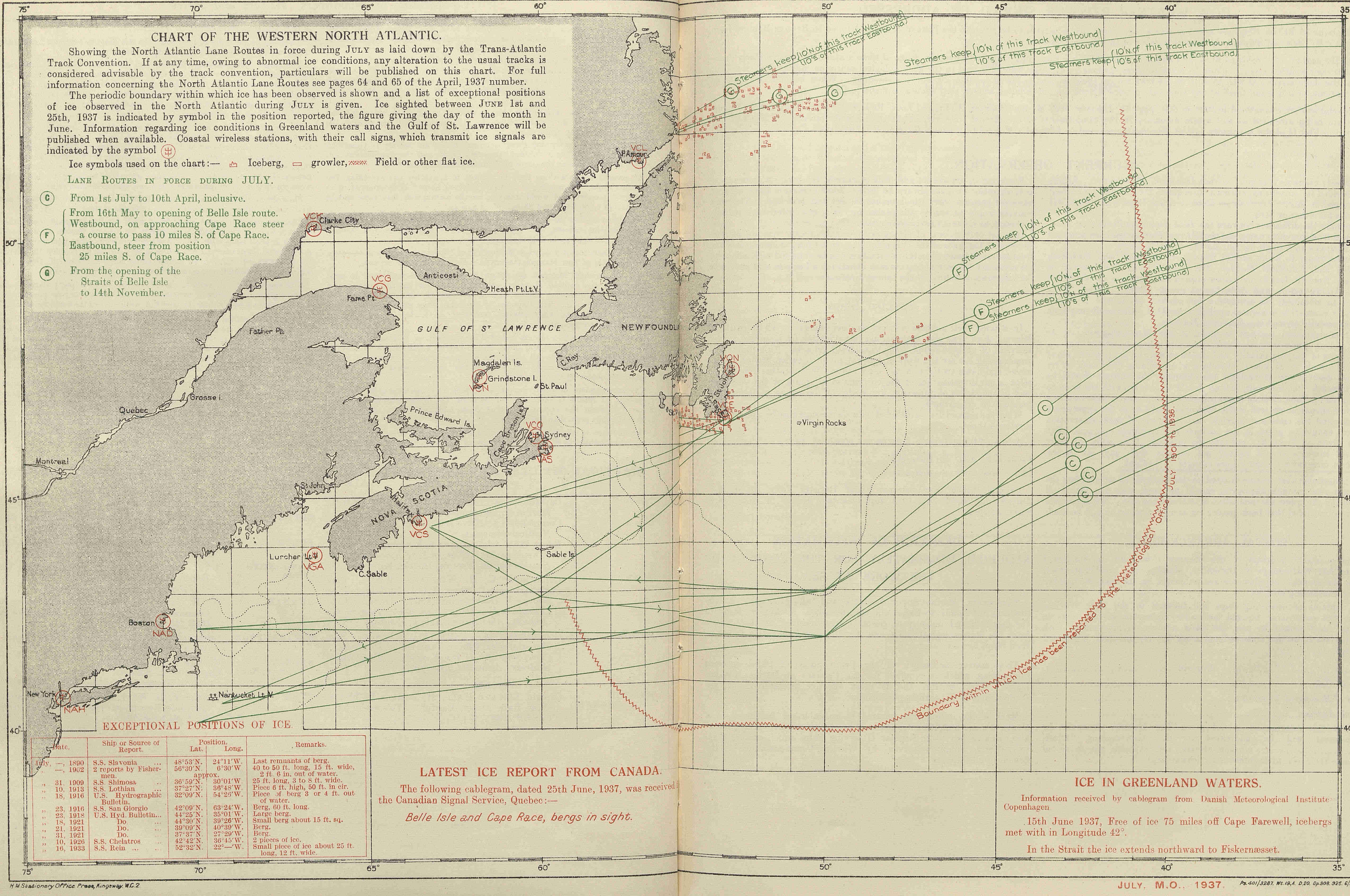
## DERELICTS AND FLOATING WRECKAGE.

| Date. | Position. |  | Description. |
|---|---|---|---|
|  | Latitude. | Longitude. |  |
| **NORTH SEA.** |  |  |  |
| 7.6.37 | 55°49′N. | 5°04′E. | Mast probably attached to a drifting wreck. |
| **ENGLISH CHANNEL.** |  |  |  |
| 12.6.37 | 50°31′N. | 0°43′W. | Red cylinder, 5ft. above water, has appearance of torpedo. |
| **NORTH ATLANTIC.** |  |  |  |
| 2.6.37 | 44°08′N. | 59°17′W. | Red Whistle buoy. |
| 5.6.37 | 39°32′N. | 73°31′W. | Second class red nun buoy. |
| 6.6.37 | 39°50′N. | 65°56′W. | Gas buoy with superstructure missing, covered with barnacles. |
| 6.6.37 | 40°48′N. | 64°28′W. | Red conicle light and whistle buoy with light extinguished, |
| 7.6.37 | 42°15′N. | 64°28′W. | Large buoy marked "*63*." |
| **NORTH ATLANTIC**—*continued.* |  |  |  |
| 8.6.37 | 18°40 N. | 74°39′W. | Log raft, 20 ft. long and 5ft. wide. |
| 13.6.37 | 46°32′N. | 7°02′W. | Cylindrical object, 14ft. long. 3ft diameter, almost awash. |
| 14.6.37 | 48°00′N. | 5°48′W. | Red floating object like metal drum. |
| 15.6.37 | 45°50′N. | 7°29′W. | Two floating pieces of wood, 50ft. length, 10ft. wide, dangerous to navigation. |
| 16.6.37 | 47°25′N. | 3°46′W. | Light buoy. |
| 18.6.37 | 50°13′N | 5°56′W. | Drifting wreck, dangerous to navigation. |
| **GULF OF MEXICO.** |  |  |  |
| 5.6.37 | 28°00′N. | 92°06′W. | Log about 2ft. in diameter. |


75°
70°
65°
60°
50°
45°
40°
35°
Clarke City
VCK
VCG
Fame Pt.
Anticosti
Heath Pt. Lt.V.
Father Pt.
GULF OF ST LAWRENCE
NEWFOUNDL
P. Amour
VCL
Magdalen Is.
Grindstone I.
VCN
St. Paul
C. Ray
VON
VCE
Quebec
Grosse I.
Prince Edward Is.
VCO
Sydney
VAS
Montreal
St. John
NOVA SCOTIA
VCS
Lurcher Lt.V.
VGA
C. Sable
Sable Is.
Boston
NAD
New York
NAH
Nantucket Lt.V.
Virgin Rocks
Steamers keep {10'N. of this track Westbound / 10'S. of this track Eastbound}
Boundary within which ice has been reported to the Meteorological Office JULY 1901 to 1936.

## CHART OF THE WESTERN NORTH ATLANTIC.

Showing the North Atlantic Lane Routes in force during July as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 64 and 65 of the April, 1937 number.

The periodic boundary within which ice has been observed is shown and a list of exceptional positions of ice observed in the North Atlantic during July is given. Ice sighted between June 1st and 25th, 1937 is indicated by symbol in the position reported, the figure giving the day of the month in June. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol ⊕

Ice symbols used on the chart:— ♔ Iceberg, ▭ growler, ⌇⌇⌇ Field or other flat ice.

Lane Routes in force during JULY.

Ⓒ From 1st July to 10th April, inclusive.

Ⓕ From 16th May to opening of Belle Isle route. Westbound, on approaching Cape Race steer a course to pass 10 miles S. of Cape Race. Eastbound, steer from position 25 miles S. of Cape Race.

Ⓖ From the opening of the Straits of Belle Isle to 14th November.

## EXCEPTIONAL POSITIONS OF ICE.

| Date. | Ship or Source of Report. | Position. Lat. | Long. | Remarks. |
|---|---|---|---|---|
| July, —, 1890 | S.S. Slavonia ... | 48°53'N. | 24°11'W. | Last remnants of berg. |
| ,, —, 1902 | 2 reports by Fishermen. | 56°30'N. approx. | 6°30'W | 40 to 50 ft. long, 15 ft. wide, 2 ft. 6 in. out of water. |
| ,, 31, 1909 | S.S. Shimosa .. | 36°59'N. | 30°01'W. | 25 ft. long, 3 to 8 ft. wide. |
| ,, 10, 1913 | S.S. Lothian ... | 37°27'N. | 36°48'W. | Piece 6 ft. high, 50 ft. in cir. |
| ,, 18, 1916 | U.S. Hydrographic Bulletin. | 32°09'N. | 54°26'W. | Piece of berg 3 or 4 ft. out of water. |
| ,, 23, 1916 | S.S. San Giorgio | 42°09'N. | 63°24'W. | Berg, 60 ft. long. |
| ,, 23, 1918 | U.S. Hyd. Bulletin... | 44°25'N. | 35°01'W. | Large berg. |
| ,, 18, 1921 | Do ... | 44°30'N. | 39°26'W. | Small berg about 15 ft. sq. |
| ,, 21, 1921 | Do. ... | 39°09'N. | 40°39'W. | Berg. |
| ,, 31, 1921 | Do. ... | 37°37'N. | 27°29'W. | Berg. |
| ,, 10, 1926 | S.S. Chelatros .. | 42°42'N. | 36°45'W. | 2 pieces of ice. |
| ,, 16, 1933 | S.S. Rein ... ... | 52°32'N. | 22°—'W. | Small piece of ice about 25 ft. long, 12 ft. wide. |

## LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 25th June, 1937, was received f the Canadian Signal Service, Quebec:—

*Belle Isle and Cape Race, bergs in sight.*

## ICE IN GREENLAND WATERS.

Information received by cablegram from Danish Meteorological Institute Copenhagen

15th June 1937, Free of ice 75 miles off Cape Farewell, icebergs met with in Longitude 42°.

In the Strait the ice extends northward to Fiskernæsset.

H.M. Stationery Office Press, Kingsway, W.C.2.

Ps.401/3287. Wt.19.A. D.20. Gp.308. 925. 6/37.

# NOTICES TO MARINE OBSERVERS.

## HOW WEATHER REPORTS SHOULD BE ADDRESSED.

Captains of British Ships are asked to please cause particular attention to be given to the Lists of Stations detailed to Receive Reports from "A" and "B" Selected Ships in the current number of the Marine Observer.

In the case of "B" Selected Ships and Supplementary Weather Reporting Ships, when within range of these stations, it is particularly desirable that their weather reports should be made to these stations by call sign, and addressed to the Meteorological centre as indicated in the List, so that the shore services as well as ships at sea may receive these reports, as far as possible, by one transmission. When beyond the range of these stations, or if it is indicated at any time that routine reports are not required ashore, they should be made to C.Q.

Special attention is invited to Section (35), page 40, January, 1937 Marine Observer, Additional Local Reports. These Optional Additional Times are being extended as and where necessary in the Supplements of the Marine Observer, as are the Lists of Stations. These Lists are repeated in Vol. II of the Admiralty List of Wireless Signals and in Admiralty Notices to Mariners for general information.

## CURRENT OBSERVATION.

It is very desirable that good current data should be recorded. Spaces are provided for current experienced throughout the day and for current determined at shorter intervals in Meteorological Logs, while Form 911 provides for either or both.

Generally the difference between the *Dead Reckoning Position* at noon, reckoned from previous noon, and the *Observed Position* has been accepted as attributable to a single current for the whole 24 hours.

It is necessary to make careful distinction between *Dead Reckoning Position* and *Estimated Position*, the former being the position as reckoned from the last fix by courses steered and distances run, corrected for all known errors and disturbances *except* current. When a fix cannot be obtained, an estimation for current (when one is known generally to exist) is sometimes applied to the D.R.; the result may then be conveniently termed the *Estimated Position*.

If this estimated position is given in the Meteorological Log or Form 911, *it should be clearly stated*, otherwise it may be misleading.

Currents of varying velocity and direction may be experienced along the track made in 24 hours; therefore, when reliable fixes such as by Stellar observations at twilight are obtained, the current should be determined for the intervals, and all should be checked with the noon to noon result. Each of these currents determined at shorter intervals than 24 hours should be entered in the Meteorological Log in the appropriate column, and the time and latitude and longitude of each observation position should be given in the latitude and longitude columns. The times given on Form 911 indicate the interval. The period of short interval currents should usually not be less than say, six hours. The best interval is probably from twilight to twilight.

It is desirable that whenever possible two methods of ascertaining the distance run through the water should be used, with one means of measuring the speed the inclination is to credit the ship. When possible it is recommended that both patent log and revolutions should be used.

For working out the set and drift of current the position *from* as well as the position *to* must always be *fixes*. Some observers have used an *estimated* position *from*, which makes the set and drift false. The same remarks apply to course allowances for set; the latter are naturally necessary to make an *estimated* course.

It is not only records of strong or abnormal currents that are desired. Records of the state of the current, no set, small sets, moderate sets and great sets at all times when the information can be obtained with reliability are necessary for completing current charts for all oceans and providing the information desired in the sailing directions.

### Selected Ships.

In making their routine wireless weather reports to all ships (C.Q.) Selected ships may give material aid to navigation by including the set and drift of current found when considered reliable. This practice of broadcasting the set and drift of current found between Stellar fixes at sunset and dawn twilight in the next routine W/T weather report also helps in our investigation of the currents in all parts of the world and may be the means of improving knowledge of the causes, variations and peculiarities of currents.

When the set and drift is included the code message may be conveniently shortened thus:

C.Q. WEATHER 13167 55106 00000 16979 Current
From 15N. 52E. To 16N. 54E.
58° one knot. *Dalgoma.*

Example taken from Selected Ships' Register Form 138 of M.V. *Dalgoma* for March 5th, 1933, supplementary groups of code figures being omitted.

## POSTAL ARRANGEMENTS.

The quarterly numbers of the Marine Observer are published on the last Wednesdays of December, March, June and September, while the monthly supplements are published on the last Wednesday of the intervening months.

If captains of observing ships will forward to the Meteorological Office the particulars required hereunder, endeavour will be made as far as mails permit to post the latest number or supplement with appropriate forms for observational work for use on their homeward passage.

*S.S.*.................................. *Captain*..........................................

*Port of Call*............................................................................

*Date of Homeward Departure*.............................................................

*Postal Address*..........................................................................

When this information is not given The Marine Observer or Supplement will be addressed to the Commanding Officer, s.s........................., c/o the owners, and captains are requested to make their own arrangements for forwarding.

## DESPATCH OF INFORMATION REQUIRED IMMEDIATELY FOR THE CONDUCT OF THE WORK AT SEA.

Shipowners, Marine Superintendents and all concerned in the despatch of mails to Ships abroad are asked to kindly facilitate the despatch and delivery of postal matter received at their offices from the Meteorological Office and Air Ministry Publication Depot to their Ships abroad.

This matter addressed to the Commanders of Ships contains information which is required for the Conduct of Marine Meteorological Work at Sea and is most effective if received by the Commanders at the earliest possible date.

Much of the information referred to is published in the Marine Observer and Supplements, and is of a seasonal nature. This journal also contains advice to Regular Observing Ships which enables them to perform voluntary service by Wireless Communication for the benefit of all shipping.

# FLEET LIST.

## VOLUNTARY OBSERVING SHIPS.

The following is a complete list of British observing ships regularly carrying out voluntary services of marine meteorology with the guidance of the Marine Division of the Meteorological Office.

The names of the Captains and observing officers of observing ships, and the Senior Wireless Operators of Selected Ships are given, as ascertained from the last written return received.

Meteorological Logs, Records, and W/T Weather Registers received between the dates specified at the head of the seventh column are acknowledged by Form number, with commencing and ending dates of period covered by the returns; the date when the last return was received being given in the eighth column.

The Captains of observing ships are requested to take this acknowledgment in cordial thanks and grateful recognition to them and their observing officers and wireless operators for the returns made and the voluntary service rendered in all parts of the world.

The classification of meteorological logs, records and registers will be notified to the Captains by post card Form 1343. Only in exceptional cases will individual letters be sent to the Captains of observing ships.

The Port Meteorological Officers and Merchant Navy Agents at the ports are advised as necessary, and they will, as necessary, communicate such advice verbally by personal call upon the Captain.

Excellent Awards will be made at the end of the financial year. The names of the Captains and Principal Observing Officers gaining these awards will be published in a special list in the Marine Observer.

It is requested that prior notification of changes of service, probable periods of lay up, transfer of Captains, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Ships not making the appropriate written returns within a reasonable period will be removed from the list, steps taken to recover any instruments lent, and the free issue of the Marine Observer discontinued.

The number of voluntary observing ships is limited to a maximum total of 360.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 281.

Captains are requested to point out any errors which may occur in the list.

*Explanation of Abbreviations.*

The number appearing before the name of an observing ship in this list is her number for the time being as a British Selected Ship.

†† indicates fitted with wireless telegraphic apparatus for long range, long wave, continuous wave transmission and reception.

*† indicates fitted with wireless telegraphic apparatus for transmission and reception; fitted for reception only of long range, long wave, continuous wave.

M.V. = Motor Vessel.

Ships having no such letters after their names are steamships.

M.L. = Equipped with a complete set of tested instruments lent by the Meteorological Office for keeping the meteorological log.

M. = Ships' own mercurial barometer, found to be sufficiently accurate and reliable for the purpose of observation for making wireless weather reports.

S. = Partly or wholly equipped with tested instruments lent by the Meteorological Office for the purpose of carrying out the duties of a Selected Ship, when detailed to do so.

A. = Ships' own aneroid.

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.36 to 10.6.37 | | Date Last Return Received. |
|---|---|---|---|---|---|---|---|---|
| 275 †† *Abosso*, M.V. ... | J. C. Shooter ... ... | C. J. B. Jones, D. S. Cox, J. H. Howgegs. | G. Arrowsmith | M.-S. | Elder Dempster Lines, Ld. | Fms. 911 & 138 | 25.2.37 to 20.5.37 | 25.5.37 |
| 122 †† *Accra*, M.V. ... | P. Sola, D.S.O., Lt.-Commr., R.N.R. ... | P. M. Ralston, C. R. Kerr. | R. J. Dowling ... | ,, | ,, ,, | ,, ,, | 12.2.37 to 7.5.37 | 10.5.37 |
| 123 †† *Adda*, M.V. ... | E. V. Davies, D.S.O. ... | P. A. Morrish, P. Jenkins, J. J. Knight. | A. J. L. Edwards | ,, | ,, ,, | ,, ,, | 28.1.37 to 25.4.37 | 29.4.37 |
| 273 *† *Adrastus* ... | A. Shaw ... ... | S. J. Weller, E. A. H. Gepp, N. B. Jones. | G. B. Price ... | M.L. | A. Holt & Co. ... | Fm. 915 | 1.9.36 to 28.12.36 | 26.2.37 |
| 090 *† *Aeneas* ... ... | J. Hatfield ... ... | T. S. Hardy, W. K. Hole, A. S. Barclay. | H. G. Nuttall ... | S. | ,, ,, ... | Fms. 911 & 138 | 8.2.37 to 18.3.37 | 16.4.37 |
| 166 *† *Agamemnon*, M.V. | J. G. Reynard ... ... | W. Hargrave, T. Bell, E. B. Sandon. | A. C. Nevin ... | ,, | ,, ,, ... | ,, ,, | 13.12.36 to 30.3.37 | 3.4.37 |
| 065 †† *Akaroa* ... ... | W. G. Summers ... | J. D. Morrison, W. Hill, A. M. Whiteford. | J. A. McAskill | ,, | Shaw, Savill & Albion Co., Ld. | ,, ,, | 1.11.36 to 10.2.37 | 24.2.37 |
| 032 †† *Alaunia*... ... | B. H. Davies, O.B.E., R.D., Capt., R.N.R. | R. Lord, A. Mackellar, J. Caunce. | J. L. Blanchard | ,, | Cunard White Star, Ld. | ,, ,,<br>Fm. 912 | 7.3.37 to 29.5.37<br>7.3.37 to 29.5.37 | 1.6.37<br>1.6.37 |
| 129 †† *Alcantara* ... | B. Shillitoe, R.D., Commr., R.N.R. | H. A. Wright, W. Williams, G. M. Fletcher. | I. H. Littlecot... | M.-S. | Royal Mail Lines, Ld. | Fms. 911 & 138 | 24.3.37 to 22.4.37 | 29.4.37 |
| 178 *† *Alipore* ... ... | L. Parfitt ... ... | J. S. G. Christian, E. F. Ferraby, L. H. Howard. | A. G. Hastings... | M. | P. & O. S.N. Co. | ,, ,, | 29.1.37 to 19.4.37 | 0.5.37 |
| 175 †† *Almanzora* ... | T. J. C. Buret, D.S.C.... | T. Davies, E. N. Gilles, S. T. Whiteside. | J. Caldwell ... | S. | Royal Mail Lines, Ld. | ,, ,, | 7.3.37 to 26.3.37 | 21 4.37 |
| 086 †† *Almeda Star* ... | H. C. Howard ... ... | R. Bobson, J. L. Anson, G. S. Dodds. | R. N. Austin ... | M.-S. | Blue Star Line, Ld. | ,, ,, | 20.1.37 to 27.5.37 | 31.5.37 |
| 022 *† *Alynbank*, M.V. | D. Gillies ... ... | A. C. Glover, J. W. Jackson, E. P. Stephens. | P. T. Brown ... | S. | A. Weir & Co. ... | ,, ,, | 5.12.36 to 16.2.37 | 30.3.37 |
| 160 *† *Amarapoora* ... | J. F. Burke ... ... | R. Treasurer, W. D. Tullock, J. P. Waugh. | A. M. Douglas... | ,, | P. Henderson & Co. | ,, ,, | 27.12.36 to 8.3.37 | 12.3.37 |
| *† *Amsterdam* ... | B. M. Stone ... ... | F. B. Allen, E. Gould. | G. Williamson ... | ,, | L. & N. E. Rly.... | ,, ,, | 1.3.37 to 4.4.37 | 5.5.37 |
| 006 †† *Andalucia Star* | R. Vernon ... ... | G. E. Barnard, F. Stokes, P. C. Reed. | R. V. Gregory ... | M.-S. | Blue Star Line, Ld. | ,, ,, | 11.1.37 to 4.5.37 | 10.5.37 |
| 113 *† *Andania* ... | F. J. Burd ... ... | O. V. Lucas, G. Boyce, R. Youd. | J. Doyle ... | S. | Cunard White Star, Ld. | ,, ,,<br>Fm. 912 | 7.3.37 to 28.5.37<br>7.3.37 to 28.5.37 | 1.6.37<br>1.6.37 |

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37. | Date Last Return Received. |
|---|---|---|---|---|---|---|---|
| *† *Anselm* | F. C. P. Harris | L. A. Sayers, F. R. Holman, G. E. Freeman. | J. O'Sullivan | S. | Booth S.S. Co., Ld. | Fms. 911 & 138 22.2.37 to 21.4.37 | 27.4.37 |
| 259 *† *Antonia* | C. H. Bate, R.D., Capt., R.N.R. | K. M. Nicholson, W. J. Foster, H. G. Hayward | W. F. Fay | ,, | Cunard White Star Ld. | ,, ,, 22.2.37 to 7.5.37<br>Fm. 912 22.2.37 to 7.5.37 | 13.5.37<br>13.5.37 |
| 209 †† *Aorangi*, M.V. | T. V. Hill | T. Germein, N. Collins, J. Melville. | C. F. G. Taylor | M.L. | Canadian-Australasian Line, Ld. | Fm. 915 3.12.36 to 8.4.37 | 10.6.37 |
| 120 †† *Apapa*, M.V. | J. H. Lawson | B. C. Haigh, C. Shand | J. Rea | M.-S. | Elder Dempster Lines, Ld. | Fms. 911 & 138 11.3.37 to 4.6.37 | 8.6.37 |
| 017 †† *Aquitania* | R. B. Irving, O.B.E., R.D., Capt., R.N.R. | J. P. V. Evans, D. M. MacLean, J. H. Walker. | J. N. Cragg | S. | Cunard White Star, Ld. | ,, ,, 18.2.37 to 7.6.37<br>Fm. 912 18.2.37 to 7.6.37 | 10.6.37<br>10.6.37 |
| 115 †† *Arandora Star* | E. W. Moulton | G. C. Case, F. Macquiston, R. L. Leech. | J. T. Williams | M.-S. | Blue Star Line, Ld. | Fms. 911 & 138 22.1.37 to 3.6.37 | 7.6.37 |
| 248 *† *Arawa* | T. V. Roberts, R.D., Commr., R.N.R. | G. L. Roe, C. W. Jennings, J. L. Carroll. | J. C. Mann | M. | Shaw, Savill Albion Co., Ld. | ,, ,, 23.1.37 to 1.5.37 | 11.5.37 |
| 114 *† *Ariguani* | R. A. Thorburn, R.D., Commr., R.N.R. | B. Coe, H. Rowstron, T. H. Bull. | B. M. Evans | S. | Elders & Fyffes, Ld. | Fms. 911 & 138 23.2.37 to 29.5.37 | 1.6.37 |
| 039 †† *Arlanza* | A. Cocks, D.S.C., R.D., Capt., R.N.R. | C. C. Dingle, F. Thacker, A. J. G. Banff. | G. Hunt | ,, | Royal Mail Lines, Ld. | ,, ,, 7.2.37 to 16.5.37 | 22.5.37 |
| 233 †† *Ascania* | C. G. Illingworth, R.D., Capt., R.N.R. | A. G. Cuthill, J. H. Kenworthy, J. F. Drake. | J. W. Haynes | ,, | Cunard White Star, Ld. | ,, ,, 1.3.37 to 16.5.37<br>Fm. 912 1.3.37 to 16.5.37 | 18.5.37<br>18.5.37 |
| 013 †† *Asturias* | A. Purvis | J. Fox, R. E. C. Wooley, L. D. Jennings. | T. Bradfield | ,, | Royal Mail Lines, Ld. | Fms. 911 & 138 22.2.37 to 26.3.37 | 30.3.37 |
| 091 †† *Athenia* | W. Rennie | L. T. Napier, J. R. Henderson, A. M. Mackinnon. | H. Herd | ,, | Donaldson Atlantic Line. | ,, ,, 17.4.37 to 7.5.37<br>F. 912 17.4.37 to 7.5.37 | 17.5.37<br>17.5.37 |
| 028 †† *Athlone Castle*, M.V. | A. Barron | E. S. Bainbridge, R. E. Partingdon. | H. Oliver | ,, | Union-Castle Mail S.S. Co., Ld. | Fms. 911 & 138 7.2.37 to 18.5.37 | 24.5.37 |
| 102 †† *Atlantis* | F. R. Miles, R.D., Capt. R.N.R. | J. A. T. Maishman, T. W. Stevens, E. A. E. Littlewood. | W. H. Chick | M.-S. | Royal Mail Lines, Ld. | ,, ,, 25.1.37 to 2.6.37 | 8.6.37 |
| 240 *† *Aurania* | S. E. Stubbs, O.B.E., R.D., Commr., R.N.R. | W. Austin, H. G. Morgan, H. L. Pryse. | C. L. Wood | ,, | Cunard White Star, Ld. | ,, ,, 21.2.37 to 22.5.37 | 31.5.37 |
| 103 *† *Ausonia* | W. C. Battle, D.S.C., R.D., Capt., R.N.R. | R. B. O'Brien, E. T. Mair, J. D. Armstrong. | V. Newton | ,, | ,, ,, | ,, ,, 15.2.37 to 4.6.37 | 7.6.37 |
| 046 *† *Australia Star*, M.V. | T. Williams | J. Davis, J. W. Thompson, N. Wilson. | J. St. C. Smart | M. | Blue Star Line, Ld. | ,, ,, 5.3.37 to 31.3.37 | 8.4.37 |
| 133 †† *Avelona Star* | G. E. Hopper | M. B. M. Tallack, P. A. Clark, S. H. Waters. | S. J. J. Scott | M.-S. | ,, ,, | ,, ,, 2.3.37 to 16.4.37 | 22.4.37 |
| 045 †† *Avila Star* | R. J. Thomas | S. Ranson, E. Baker, J. Taylor. | H. Varley | ,, | ,, ,, | ,, ,, 14.2.37 to 8.6.37 | 10.6.37 |
| 068 †† *Balmoral Castle* | E. A. Comley | H. E. Macmillan | J. H. Summers | S. | Union-Castle Mail S.S. Co., Ld. | ,, ,, 11.3.37 to 24.4.37 | 27.4.37 |
| 110 *† *Balmoralwood* | L. C. Cockerell, D.S.O. | J. W. Pacey | ... | ,, | Constantine Steamships, Ld. | ,, ,, 7.2.37 to 24.4.37 | 10.5.37 |
| 037 *† *Baronesa* | R. W. Compton | J. R. Faulkner, F. W. Kent, S. W. Howell. | ... | M. | Furness Lines, Ld. | ,, ,, 21.12.36 to 3.3.37 | 8.3.37 |
| 180 *† *Beaverbrae* | E. Jones | P. Locke, A. Mackie, G. Geddes. | W. Kinninmouth | M.-S. | Canadian Pacific Steamships, Ld. | ,, ,, 28.2.37 to 29.5.37<br>Fm. 912 28.2.37 to 29.5.37 | 2.6.37<br>2.6.37 |
| 130 *† *Beaverburn* | A. H. Hall | E. V. Glennie, W. E. Halberr, R. J. Hyland. | S. J. Taylor | ,, | ,, ,, | Fms. 911 & 138 13.2.37 to 22.5.37<br>Fm. 912 13.2.37 to 22.5.37 | 25.5.37<br>25.5.37 |
| 138 *† *Beaverdale* | A. Rothwell | W. Whitfield, G. H. Coughlan, F. H. Stell. | J. Ormiston | ,, | ,, ,, | Fms. 911 & 138 13.3.37 to 16.5.37<br>Fm. 912 13.3.37 to 16.5.37 | 20.5.37<br>20.5.37 |
| 279 *† *Beaverford* | D. Pert | B. Ford, G. Billot, A. D. Morison. | J. J. Fraser | ,, | ,, ,, | Fms. 911 & 138 20.2.37 to 8.5.37<br>Fm. 912 20.2.37 to 8.5.37 | 14.5.37<br>14.5.37 |
| *† *Benarty* | J. Watt | ... | ... | M. | W. Thomson & Co. | Fm. 911 28.3.37 to 10.5.37 | 7.6.37 |
| *† *Benmohr* | J. C. Sinclair | ... | ... | M.L. | ,, ,, | ... | ... |
| *† *Benwyvis* | H. J. Small | W. P. Gollam, J. E. McKenzie, C. J. Birnie. | D. H. Walker | M. | ,, ,, | F. 911 22.1.37 to 20.5.37 | 26.5.37 |
| 069 †† *Berengaria* | G. Gibbons, R.D., Capt., R.N.R. | J. Law, L. Thompson, E. A. Divers. | S. W. Brown | S. | Cunard White Star, Ld. | Fms. 911 & 138 23.2.37 to 25.5.37<br>Fm. 912 23.2.37 to 25.5.37 | 1.6.37<br>1.6.37 |
| 145 *† *Berwickshire* | J. D. Matthews | R. A. Harris, D. W. Muir, S. H. Graham | W. Smale | ,, | Turnbull, Martin & Co., Ld. | Fms. 911 & 138 16.3.37 to 2.4.37 | 24.4.37 |
| 007 *† *Bradfyne* | M. O'Neill | H. F. Thomas, P. Evans, T. McKenna. | C. E. Wheeler | ,, | Sir Wm. Reardon Smith & Partners, Ld. | ,, ,, 3.10.36 to 6.4.37 | 26.4.37 |
| *† *Brighton* | W. Lidbetter | E. Balcombe | A. Jones | ,, | Southern Rly. | ,, ,, 21.3.37 to 15.5.37 | 2.6.37 |
| 189 †† *Britannic* | A. T. Brown, R.D., Capt. R.N.R. | F. L. Williams, H. Hudson, A. Young. | F. Clark | ,, | Cunard White Star, Ld. | ,, ,, 5.4.37 to 4.6.37 | 7.6.37 |
| 106 *† *British Colonel* | J. K. W. Kemp | R. Skea, C. Rennels | N. G. Swanson | M. | British Tanker Co., Ld. | ,, ,, 12.12.36 to 2.6.37 | 10.6.37 |
| 038 *† *British Corporal* | J. H. Bovill | D. Lyle, H. H. Burke, J. Clark. | W. E. G. Rickards | ,, | ,, ,, | ,, ,, 13.3.37 to 27.5.37 | 8.6.37 |
| *† *British Diplomat* | R. M. Maughan | ... | ... | ,, | ,, ,, | ... | ... |
| *† *British Endurance*, M.V. | J. Davies | W. Barnfield | ... | ,, | ,, ,, | Fm. 941 10.3.37 to 29.3.37 | 20.4.37 |
| 054 *† *British General* | F. O. Armstrong | H. F. Wood, P. E. Norton, A. I. Henderson. | F. Hardford | ,, | ,, ,, | Fms. 911 & 138 11.1.37 to 25.5.37 | 1.6.37 |
| *† *British Grenadier* | J. A. Ferrier | H. P. Finch | ... | ,, | ,, ,, | Fm. 911 27.2.37 to 5.5.37 | 11.5.37 |
| *† *British Hussar* | S. E. Mutton | F. M. Shipway | ... | ,, | ,, ,, | ,, 26.3.37 to 12.5.37 | 19.5.37 |
| 076 *† *British Officer* | W. Watkin-Thomas | S. Thompson, S. A. Caws, A. Merrick. | T. Manson | ,, | ,, ,, | Fm. 911 & 138 1.2.37 to 11.5.37 | 20.5.37 |
| *† *British Statesman* | J. S. Copplestone | G. C. Dobson | ... | ,, | ,, ,, | Fm. 911 21.2.37 to 10.5.37 | 14.5.37 |
| *† *British Strength*, M.V. | J. C. Leybourne | F. W. Willis | ... | ,, | ,, ,, | ,, 2.4.37 to 26.5.37 | 8.6.37 |
| *† *British Workman* | C. W. C. Stook | R. T. Hedley | ... | ,, | ,, ,, | ,, 28.2.37 to 10.4.37 | 19.4.37 |
| 249 *† *Buteshire* | C. A. I. Laird | P. McMillan, R. H. Pape, C. F. Cooke. | W. W. Whewell | S. | Houston Line | Fms. 911 & 138 1.1.36 to 23.5.36 | 24.6.36 |
| 200 *† *Cairnesk* | E. A. Organ | S. W. Parks | ... | ,, | Cairns, Noble & Co., Ltd. | Fm. 911 & 138 21.2.37 to 8.5.37<br>Fm. 912 21.2.37 to 8.5.37 | 11.5.37<br>11.5.37 |
| 241 *† *Cairnglen* | A. W. Melling | A. Molineaux | R. A. Penny | ,, | ,, ,, | Fm. 911 & 138 10.3.37 to 6.5.37<br>Fm. 912 10.3.37 to 6.5.37 | 19.5.37<br>19.5.37 |
| 253 *† *Cairnross* | L. Halcrow | D. Easson, A. J. Dunn, T. Sutherland. | H. Jardine | ,, | ,, ,, | Fms. 911 & 138 22.3.37 to 4.6.37<br>Fm. 912 22.3.37 to 4.6.37 | 8.6.37<br>8.6.37 |
| 031 †† *Caledonia* | A. Collie | H. L. P. King, R. M. Brown, B. S. Leiper | J. F. Reid | ,, | Anchor Line, Ld. | Fms. 911 & 138 7.3.37 to 5.6.37<br>Fm. 912 7.3.37 to 5.6.37 | 8.6.37<br>8.6.37 |
| 139 †† *California* | R. W. Smart | J. D. Mackenzie, R. Caldwell, W. McCabe | D. Thompson | ,, | ,, ,, | Fms. 911 & 138 13.3.37 to 26.4.37 | 29.4.37 |
| *† *Cambria* | E. B. Turner | F. G. J. Manning | J. Pritchard | ,, | L.M. & S. Rly. | ,, ,, 13.2.37 to 4.6.37 | 8.6.37 |
| 223 *† *Cambridge* | R. Williams | ... | ... | ,, | Federal S.N. Co., Ld. | ... | ... |
| 042 †† *Cameronia* | G. B. Kelly | J. L. Gibson, G. Forrest, J. George | H. McDonald | ,, | Anchor Line, Ld. | Fm. 911 & 138 21.2.37 to 17.4.37<br>Fm. 912 21.2.37 to 17.4.37 | 9.5.37<br>9.5.37 |
| 252 *† *Camito* | R. J. Bostock | J. Cameron, A. W. King | R. E. Blizzard | ,, | Elders & Fyffes, Ld. | Fms. 911 & 138 17.2.37 to 22.5.37 | 27.5.37 |

| Name of Vessel. | Captain | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37 | Date Last Return Received. |
|---|---|---|---|---|---|---|---|
| 117 *† *Cape of Good Hope* M.V. | A. T. McGlashan ... | R. J. Carnochan, P. A. Wallace, H. Evans | G. W. Pragnell... | S. | Lyle Shipping Co., Ld. | Fms. 911 & 138 4.11.36 to 26.4.37 | 19.5.37 |
| 266 †† *Carinthia* ... | P. A. Murchie, O.B.E., R.D., Capt., R.N.R. | F. J. Owen, R. Conway, W. G. B. Jones. | R. F. Watson ... | „ | Cunard White Star, Ld. | „ „ 5.4.37 to 27.5.37<br>Fm. 912 5.4.37 to 27.5.37 | 31.5.37<br>31.5.37 |
| 092 †† *Carnarvon Castle,* M.V. | H. L. Scholefield ... | F. Marriott, C. C. Cutterbuch | P. Haslam ... | „ | Union-Castle Mail S.S. Co., Ld. | Fms. 911 & 138 20.2.37 to 11.4.37 | 13.4.37 |
| 155 †† *Carthage* ... | H. M. Jack ... ... | R. A. Gerry, G. P. Edwards, M. Greasley. | F. Rose ... | M.-S. | P. & O. S.N. Co. | „ „ 3.1.37 to 21.4.37 | 26.4.37 |
| 184 †† *Cathay* ... ... | C. B. Roche ... ... | D. West, D. W. A. Bell, L. Porter. | H. Dawson ... | „ | „ „ „ | „ „ 15.2.37 to 20.5.37 | 24.5.37 |
| 127 *† *Cavina* ... ... | W. T. Forrester, O.B.E. | E. Swale, W. S. Chanter ... | A. N. Taylor ... | S. | Elders & Fyffes, Ld. | „ „ 9.3.37 to 9.5.37 | 13.5.37 |
| 011 †† *Ceramic* ... | H. C. Elford ... ... | G. F. Cresswell, G. Hawley, H. Cartwright. | W. Ross ... | „ | Shaw, Savill & Albion Co., Ld. | „ „ 18.1.37 to 5.5.37<br>Fm. 912 18.1.37 to 5.5.37 | 7.5.37<br>7.5.37 |
| 029 *† *Cheshire,* M.V. | W. L. Foster ... ... | N. F. Fitch, A. N. Williamson, C. R. Lovell. | F. W. Greaves... | „ | Bibby Bros. & Co. | Fm. 911 & 138 15.2.37 to 21.4.37 | 11.5.37 |
| 191 *† *Chindwin* ... | G. Paterson ... ... | J. S. Whitehead, J. A. Cole, J. M. Neitch. | A. C. Hedley ... | „ | P. Henderson & Co. | „ „ 22.3.37 to 25.5.37 | 4.6.37 |
| 067 *† *Chinese Prince,* M.V. | W. Finch ... ... | W. Niven, A. H. Kent, E. J. Roberts. | E. J. Shillabeer | M.L. | Furness Lines Ld. | Fm. 915 8.1.37 to 22.4.37 | 1.6.37 |
| 192 †† *Chitral* ... ... | H. Elliott Smith, R.D., Lt.-Commr., R.N.R. | J. C. Langton, R. H. Turner, E. V. Lewis. | P. R. Rowley ... | M.-S. | P. & O. S.N. Co. | Fms. 911 & 138 14.3.37 to 31.3.37 | 10.4.37 |
| 051 *† *City of Auckland* | H. G. Jenkins, O.B.E. | E. G. O'Driscoll, D. C. Hamilton | G. B. Cleland ... | S. | Ellerman Lines, Ld. | „ „ 13.3.37 to 12.5.37 | 7.6.37 |
| 135 *† *City of Barcelona* | W. Hill ... ... | R. A. Jones, A. Cran, R. J. Jeffers. | R. C. Colbourne | M. | „ „ „ | „ „ 16.3.37 to 16.5.37 | 3.6.37 |
| 265 *† *City of Baroda* | A. V. Radcliffe, R.D., Commr., R.N.R. | W. H. Dalton, R. S. Steel D. Crook. | A. Forbes ... | S. | „ „ „ | „ „ 27.3.37 to 8.6.37 | 10.6.37 |
| 057 ††*City of Benares* ... | A. Lee ... ... ... | H. H. Asher, J. Pringle ... | A. Fairweather | „ | „ „ „ | „ „ 4.2.37 to 14.5.37 | 7.6.37 |
| 158 *† *City of Cairo* ... | A. N. Hogg ... ... | T. B. Savigny, S. E. Britt, F. C. Mason. | G. S. Creighton | M. | „ „ „ | „ „ 30.1.37 to 7.4.37 | 14.4.37 |
| 215 *† *City of Canberra* | H. R. Jackson ... | A. Travis, A. P. Sidney, G. B. Davies. | R. H. Hallam | „ | „ „ „ | „ „ 1.3.37 to 29.3.37 | 15.4.37 |
| 033 *† *City of Canton* ... | E. Scrymgeour... ... | O. G. Williams, W. E. Fletcher, T. L. Vaughan. | L. J. Delaney ... | „ | „ „ „ | „ „ 20.1.37 to 16.5.37 | 27.5.37 |
| 157 *† *City of Delhi* ... | R. E. Teague ... ... | W. J. Nixon, D. J. Inglis, J. Wright. | J. O'Callaghan | S. | „ „ „ | „ „ 26.2.37 to 7.4.37 | 14.4.37 |
| 030 *† *City of Dieppe* | H. Cartwright ... ... | J. F. MacVicar, J. F. Mitchell, J. B. Muir. | J. D. Murphy ... | „ | „ „ „ | „ „ 19.2.37 to 13.5.37 | 27.5.37 |
| 049 *† *City of Evansville* | D. O. Evans ... ... | F. P. Monkton, A. G. Freeman, F. W. Woods. | F. J. Glynn ... | M. | „ „ „ | „ „ 20.12.36 to 17.2.37 | 12.4.37 |
| 220 †† *City of Exeter* ... | D. L. Lloyd ... ... | P. C. Wilson, R. Webber, D. Reid | L. Hugo ... | S. | „ „ „ | „ „ 8.3.37 to 9.5.37 | 28.5.37 |
| 089 *† *City of Hereford* | W. J. Merchant ... | N. Williams, C. W. Cross, D. W. Penberthy. | W. Macmahon | M. | „ „ „ | „ „ 4.11.36 to 18.2.37 | 23.2.37 |
| *† *City of Lille* ... | C. Nelson ... ... | H. M. Rome ... ... ... | ... ... ... | S. | „ „ „ | Fm. 911 23.2.37 to 3.4.37 | 23.4.37 |
| 237 †† *City of London*... | J. G. Brown ... ... | H. A. Hazeel, W. G. McCullock, F. G. Guttridge. | R. Cruickshank | „ | „ „ „ | Fms. 911 & 138 3.3.37 to 6.5.37 | 11.5.37 |
| 256 *† *City of Lyons* ... | E. Mason ... ... | J. W. Cubbon, H. E. Roberts, W. James. | W. R. Beynon ... | M. | „ „ „ | „ „ 24.1.37 to 13.3.37<br>Fm. 912 24.1.37 to 13.3.37 | 1.4.37<br>1.4.37 |
| 066 †† *City of Nagpur*... | N. McNeil, O.B.E. ... | E. H. H. Walton ... ... | A. E. Dowe ... | S. | „ „ „ | Fms. 911 & 138 10.1.37 to 14.3.37 | 5.4.37 |
| 074 †† *City of Paris* ... | D. M. Bremner ... | A. J. Barnett, W. G. Stobbs, I. McBeath. | G. Fenton ... | „ | „ „ „ | „ „ 8.2.37 to 11.5.37 | 5.6.37 |
| 271 *† *City of Roubaix* | H. Spencer, D.S.C. ... | J. M. Milne, T. V. Birkett, A. H. G. Jones. | F. Harrop ... | M. | „ „ „ | „ „ 9.2.37 to 20.5.37 | 27.5.37 |
| 272 *† *City of Singapore* | T. R. Watkins ... ... | R. Price, G. Mathias, R. Broadbent. | R. Tibbetts ... | „ | „ „ „ | „ „ 30.1.37 to 10.3.37 | 19.5.37 |
| 035 *† *City of Sydney* ... | E. G. Hoppins... ... | E. P. B. Bradbury, E. M. Robertson, R. M. Hall. | D. Uttley ... | „ | „ „ „ | „ „ 11.4.37 to 30.4.37 | 1.6.37 |
| 167 *† *City of Tokio* ... | G. Burton ... ... | A. L. Beckett, T. R. Pulford, F. Stranger. | W. R. Jones ... | S. | „ „ „ | „ „ 13.2.37 to 30.4.37 | 4.5.37 |
| *† *City of Winchester* | W. S. Coughlan ... | H. Laird ... ... ... | ... ... ... | „ | „ „ „ | Fm. 911 17.2.37 to 18.3.37 | 26.4.37 |
| 125 *† *City of Windsor* | J. B. Pattison ... ... | R. S. Mann, A. Westlake, H. B. Mole. | M. J. Hick ... | „ | „ „ „ | Fms. 911 & 138 3.2.37 to 1.6.37 | 8.6.37 |
| 027 *† *Clan Farquhar* ... | A. Low ... ... | J. Browne, J. Napier, J. Paterson. | W. J. Ferguson | M. | Clan Line Steamers, Ld. | „ „ 22.3.37 to 28.4.37 | 8.6.37 |
| 050 *† *Clan Macalister* | F. J. Stenson, R.D., A.D.C., Capt., R.N.R. | M. Bruce, J. Hubbard, R. C. V. Miles. | C. J. Andrews ... | S. | „ „ „ | „ „ 25.1.37 to 15.4.37 | 24.4.37 |
| 222 *† *Clan Macdougall,* M.V. | L. M. Redford ... | W. Graham, H. F. Town, J. L. Lowrey. | G. Turner ... | „ | „ „ „ | „ „ 9.3.37 to 1.4.37 | 24.4.37 |
| 101 *† *Clan Macfarlane* | W. J. Hughes ... ... | J. E. Clayton, G. A. Fox, R. F. Carter. | T. M. Ferguson | „ | „ „ „ | „ „ 5.2.37 to 23.4.37 | 4.5.37 |
| 118 *† *Clan Macindoe*... | H. Andrews ... ... | C. Rogers, K. M. Banks, A. J. Jenkins. | D. C. Munro ... | „ | „ „ „ | „ „ 6.2.37 to 26.4.37 | 15.5.37 |
| 082 *† *Clan Macnair* ... | R. J. W. Bennett ... | R. W. Cook, R. Armstrong, E. Avery. | C. A. B. Scott ... | „ | „ „ „ | „ „ 4.1.37 to 18.3.37 | 31.3.37 |
| 255 *† *Clan Macneil* ... | P. V. Taylor ... ... | W. R. Thomas, I. C. Scott, E. Coultas. | T. Herriotts ... | „ | „ „ „ | „ „ 26.12.36 to 23.3.37 | 1.4.37 |
| 001 *† *Clan Macphee* ... | J. H. Crellin ... ... | S.S.Stanmwitz, R.N.Johnson. | W. Scott ... | „ | „ „ „ | „ „ 21.2.37 to 26.3.37 | 1.4.37 |
| 168 *† *Clan Mactaggart* | C. C. Parfitt ... ... | C. A. Thomas, J. De Garis, E. Jones. | C. C. Parfitt ... | „ | „ „ „ | „ „ 20.3.37 to 5.4.37 | 4.5.37 |
| *† *Clan Mactavish* | H. M. Rodger ... ... | A. W. Towdon ... ... | ... ... ... | „ | „ „ „ | „ „ 13.3.37 to 16.4.37 | 11.5.37 |
| 002 *† *Clan Macwhirter* | P. M. Macfarlane ... | A. Woodall, J. V. Findlay, T. P. Cranwell. | J. Dell ... ... | „ | „ „ „ | Fms. 911 & 138 23.1.37 to 24.3.37 | 26.4.37 |
| 109 *† *Clan Morrison* ... | R. P. Galer, R.D., Commr., R.N.R. | F. B. Fairweather, F. Thornton. | I. Perry ... | „ | „ „ „ | „ „ 2.3.37 to 21.5.37 | 26.5.37 |
| *† *Clement* ... | O. J. P. Lee, R.D., Capt., R.N.R. | N. Caris ... ... ... | ... ... ... | „ | Booth S.S. Co., Ld. | Fm. 911 3.2.37 to 4.4.37 | 13.4.37 |
| 041 *† *Clydebank,* M.V. | W. Broome ... ... | C. W. Haycraft, A. Cornell, J. R. Mahon. | J. Farley ... | „ | A. Weir & Co. ... | Fms. 911 & 138 22.3.37 to 6.4.37 | 23.4.37 |
| 084 †† *Clydefield* ... | D. A. Low ... ... | J. Walker, R. Barry, J. Walters. | W. Gillies ... | „ | Hunting & Son, Ltd. | „ „ 20.4.37 to 22.5.37 | 29.5.37 |
| 016 *† *Comliebank,* M.V. | V. Harper ... ... | H. S. Brown, L. W. Thorne, E. W. Dibble. | M. F. Cantillon | „ | A. Weir & Co. ... | „ „ 28.12.36 to 31.5.37 | 9.6.37 |
| 185 †† *Comorin* ... | C. W. Cartwright, D.S.C. | R. H. Hand, F. D. Shaw, F. F. Tucker | E. Howard ... | M.-S. | P. & O. S.N. Co. | „ „ 7.2.37 to 13.5.37 | 27.5.37 |
| 198 *† *Contractor* ... | H. Collins ... ... | A Moreton, J. H. Roberts, A. O. Lewis. | D. Lloyd ... | M. | T. & J. Harrison | „ „ 15.2.36 to 17.3.37 | 24.3.37 |
| 187 *† *Coptic,* M.V. ... | J. Avern, Commr., R.N.R. | C. W. Sendall, L. E. Edmeads, D. Ashley. | P. M. Edwards | S. | Shaw Savill & Albion Co., Ld. | „ „ 13.9.36 to 29.12.36 | 23.1.37 |

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37. | Date Last Return Received. |
|---|---|---|---|---|---|---|---|
| 258 †† *Corfu* | J. H. Biggs, R.D., Commr., R.N.R. | A. L. Harper, W. T. C. Lethbridge, H. V. Williamson. | R. V. McCreath | M.-S. | P. & O. S.N. Co. | Fms. 911 & 138 20.12.36 to 23.3.37 | 31.3.37 |
| 214 *† *Counsellor* | A. H. Frew | F. Steventon, W. Moore, J. Roberts. | J. Healy | M. | T. & J. Harrison | ,, ,, 7.2.37 to 12.3.37 | 21.4.37 |
| *† *Crispin* | A. Elliott | H. W. Taggart, J. Whayman, W. Torkington. | W. Hamersley | S. | Booth S S. Co.,Ld | ,, ,, 9.1.37 to 23.5.37 | 25.5.37 |
| 036 *† *Cumberland* | E. A. Burton | J. R. Vincent, D. H. Chadwick, C. P. Robinson. | E. D. Slater | ,, | Federal S.N. Co., Ld. | ,, ,, 22.8.36 to 9.12.36 | 16.12.36 |
| 274 *† *Custodian* | T. J. Lacey | R. E. Harvey, T. B. Littlechild, W. Pemberton. | C. Dodd | M. | T. & J. Harrison | ,, ,, 1.3.37 to 28.4.37 | 14.5.37 |
| 219 *† *Dearne* | T. H. Woodhead | J. Clark | ... ... ... | S. | L.M. & S. Rly. | Fm. 915 26.9.36 to 20.3.37 | 2.4.37 |
| *† *Deebank* | J. K. Brook, D.S.O., R. D., Commr., R.N.R. | A. Cameron, J. D. Betts, M. A. Bulley. | ... ... ... | ,, | A. Weir & Co. | ,, 31.12.36 to 15.4.37 | 24.4.37 |
| 204 †† *Derbyshire*, M.V. | G. L. English | G. Meggitt, D. Minto, A. Knight. | D. McLellan | ,, | Bibby Bros. & Co. | Fm. 911 & 138 14.3.37 to 19.5.37 | 24.5.37 |
| 061 *† *Devon* | J. Blencowe | H. C. Turner, H. Watkins, K. Margerrison. | W. B. Charlton | M. | British India S.N. Co., Ld. | ,, ,, 23.2.37 to 29.3.37 | 3.5.37 |
| 072 *† *Director* | W. Rowberry | J. F. Tooth, H. Philpott, A. A. Johnson. | T. A. Walker | ,, | T. & J. Harrison | ,, ,, 19.2.37 to 3.5.37 | 26.5.37 |
| 058 *† *Dorset*, M.V. | J. Howell-Price | H. S. Dawson, H. G. Letts, E. G. Ott. | J. H. Dance | ,, | Federal S.N. Co., Ld. | Fms. 911 & 138 28.10.36 to 26.2.37 | 5.3.37 |
| 142 †† *Duchess of Atholl* | W. B. Coyle, R.D., Commr., R.N.R. | W. R. Thorburn, F. Falconer, W. S. Stanley. | E. Murphy | M.-S. | Canadian Pacific Steamships, Ltd. | ,, ,, 18.4.37 to 6.5.37<br>Fm. 912 18.4.37 to 6.5.37 | 13.6.37<br>13.6.37 |
| 152 †† *Duchess of Bedford.* | C. H. Sapworth | E. J. Oatridge, F. Roberts, R. McKillop. | A. O'Sullivan | ,, | ,, ,, | Fms. 911 & 138 28.2.37 to 14.5.37<br>Fm. 912 28.2.37 to 14.5.37 | 17.5.37<br>17.5.37 |
| 151 †† *Duchess of Richmond.* | H. A. Moore, R.D., Capt., R.N.R. | F. W. S. Roberts, J. Soan, F. Hicks. | D. Forster | S. | ,, ,, | Fms. 911 & 138 20.1.37 to 21.5.37<br>Fm. 912 20.1.37 to 21.5.37 | 25.5.37<br>25.5.37 |
| 143 †† *Duchess of York* | C. Richardson | C. H. Belton, R. Barlow | J. W. Potts | M.-S. | ,, ,, | Fms. 911 & 138 14.2.37 to 28.5.37<br>Fm. 912 14.2.37 to 28.5.37 | 31.5.37<br>31.5.37 |
| *† *Duke of Argyll* | T. W. Richmond | H. Thompson, W. S. Morrow. | G. Poulton | S. | L.M. & S. Rly. | Fms. 911 & 138 13.1.37 to 30.5.37 | 1.6.37 |
| *† *Duke of Lancaster* | H. A. Tulley | W. Cole, W. N. Greenwood | F. Garrett | ,, | ,, ,, | ,, ,, 14.2.37 to 18.5.37 | 20.5.37 |
| *† *Duke of Rothesay* | F. C. Raven | A. E. Willmott | G. Pilling | ,, | ,, ,, | ,, ,, 4.2.37 to 3.6.37 | 7.6.37 |
| 098 †† *Dunbar Castle*, M.V. | W. S. Colbourne, O.B.E., R.D., Commr., R.N.R. | T. F. E. Wyatt | P. P. Williams | ,, | Union-Castle Mail S.S. Co., Ld. | ,, ,, 17.1.37 to 18.3.37 | 30.3.37 |
| *† *Dunedin Star*, M.V. | D. Owen | J. Byrne | ... ... ... | M. | Blue Star Line, Ld. | Fm. 911 6.11.36 to 17.2.37 | 1.3.37 |
| 193 †† *Dunnottar Castle*, M.V. | A. H. Blackman | R. F. Pembry | ... ... ... | S. | Union-Castle Mail S.S. Co. Ld. | Fms. 911 & 138 13.2.37 to 4.4.37 | 6.4.37 |
| 043 †† *Dunvegan Castle.* M.V. | H. R. Northwood | P. H. Grieves | ... ... ... | ,, | ,, ,, | ,, ,, 27.2.37 to 14.4.37 | 22.4.37 |
| 064 *† *Durham*, M.V. | H. L. Upton, D.S.C., R.D., Capt., R.N.R. | M.W. N. Young, H. N. Lawson, R. E. Walker. | J. V. Stockman | M. | Federal S.N. Co., Ld. | ,, ,, 21.12.36 to 1.5.37 | 13.6.37 |
| *† *Eastern Coast* | W. Quirk | R. E. Holt, W. H. Davies | ... ... ... | M.L. | Coast Lines, Ld. | Fm. 915 17.7.36 to 28.12.36 | 15.2.37 |
| 077 †† *Edinburgh Castle* | W. Weller | J. E. Gibbs, A. J. Hart | A. G. Blow | S. | Union-Castle Mail S.S. Co., Ld. | Fms. 911 & 138 24.1.37 to 6.5.37 | 19.5.37 |
| 107 *† *El Argentino*, M.V. | F. Ellis, D.S.C. | H. N. Sherwell, G. Brighton, J. G. Freeman. | C. Lott | M. | Furness Lines | ,, ,, 14.3.37 to 25.5.37 | 28.5.37 |
| 203 †† *Empress of Australia.* | W. G. Busk-Wood, R.D., Commr., R.N.R. | E. F. Aikman | ... ... ... | S. | Canadian Pacific Steamships, Ld. | ,, ,, 20.5.37 to 4.6.37<br>Fm. 912 20.5.37 to 4.6.37 | 9.6.37<br>9.6.37 |
| 034 †† *Empress of Britain.* | G. R. Parry, R.D., Commr., R.N.R. | W. S. Main, A. C. Harrisson, D. Dunn. | G. Potts | ,, | ,, ,, ,, | Fms. 911 & 138 16.5.37 to 21.5.37 | 26.5.37 |
| 154 †† *Empress of Canada.* | J. F. Patrick<br>W. T. Kinby | C. F. Alltree, G. E. Murrell, J. A. Mitchell. | J. Newberg | M.L. | ,, ,, ,, | Fm. 915 18.9.36 to 27.2.37 | 20.4.37 |
| 153 †† *Empress of Japan* | L. D. Douglas, R.D., Lt.-Commr., R.N.R.,<br>W. T. Kinley | S. Fieldhouse, E. Connorton, V. E. Jaynes. | ... ... ... | ,, | ,, ,, ,, | ,, 16.10.36 to 3.2.37 | 1.4.37 |
| 119 †† *Erin* | R. N. Shore | W. A. Phillips | ... ... ... | S. | Erin S.S. Co., Ld. | Fms. 911 & 138 18.2.37 to 1.5.37<br>Fm. 912 18.2.37 to 1.5.37 | 8.5.37<br>8.5.37 |
| *† *Eros* | R. C. Vigurs | H. T. Green, J. T. Vigurs, J. Matthews, H. E. Lascelles. | H. L. Couson | ,, | ,, ,, | Fms. 911 & 138 4.2.37 to 29.5.37 | 1.6.37 |
| 075 *† *Esperance Bay* | R. McKenzie | E. Johansen, G. Houcher, B. W. Smith | A. R. Porter | M. | G. Thompson & Co., Ld. | ,, ,, 24.12.36 to 18.4.37 | 23.4.37 |
| 169 *† *Essex*, M.V. | F. N. Wyatt | J. Brooke Smith, J. W. C. Pring, J. R. M. Ramsey. | N. I. Hallett | ,, | Federal S.N. Co., Ld. | ,, ,, 25.1.37 to 20.4.37 | 14.5.37 |
| *† *Explorer* | T. G. Fraser<br>D. C. Sandison | T. R. Ness, W. Annison | ... ... ... | M.L. | Scottish Fishery Board | Fm. 915 10.8.36 to 18.12.36 | 31.12.36 |
| 124 *† *Fordsdale* | D. Christie | A. Warren, G. Sangwin, D. McLean. | E. Whibley | S. | Shaw, Savill & Albion Co., Ld. | Fms. 911 & 138 9.12.36 to 22.3.37 | 1.4.37 |
| 239 *† *Foylebank*, M.V. | H. J. Smith | W. Blakeney, J. E. Allen, E. Bolton. | A. J. Locke | ,, | A. Weir & Co. | ,, ,, 7.2.37 to 22.4.37 | 31.5.37 |
| 173 †† *Franconia* | P. R. Vaughan, D.S.C., R.D., Commr., R.N.R.<br>A. T. Brown, R.D., Capt. R.N.R. | F. Patchett, B. Tanner, D. McLean. | T. F. Wyatt | ,, | Cunard White Star, Ld. | ,, ,, 30.8.36 to 20.10.36 | 22.10.36 |
| 159 *† *Fresno City*, M.V. | J. W. Potts | P. J. Ryan, P. W. Davies, E. Scott. | E. P. Place | ,, | Sir Wm. Reardon Smith & Partners, Ld. | ,, ,, 20.11.36 to 18.1.37 | 29.1.37 |
| 186 †† *Georgic*, M.V. | B. B. Oram, R.D., Commr., R.N.R. | F. E. Patchett, R. Shaw, J. Chapman. | H. S. Reid | ,, | Cunard White Star, Ld. | Fms. 911 & 138 14.4.37 to 22.5.37<br>Fm. 912 14.4.37 to 22.5.37 | 25.5.37<br>25.5.37 |
| 245 *† *Gitano* | H. R. Soulsby | S. Wilkinson, W. Stevens, F. Mason. | A. Hitchon | ,, | Ellerman Wilson Line, Ltd. | Fms. 911 & 138 19.4.37 to 20.5.37 | 27.5.37 |
| 234 *† *Glaucus* | B. T. Batho | W. K. Kerr, W. T. Harris, R. L. Cladingbowl. | G. E. Turner | M.L. | A. Holt & Co. | Fm. 915 4.7.36 to 4.12.36 | 15.2.37 |
| 026 *† *Glenbank*, M.V. | J. Macdonald | W. J. H. Pearce, D. Morrison | H. Row | S. | A. Weir & Co. | Fms. 911 & 138 25.1.37 to 6.4.37 | 11.5.37 |
| 126 *† *Glengarry*, M.V. | E. Waite | H. K. Martin, C. C. Reeder, P. G. Neil. | W. Fleming | M. | Glen Line, Ld. | ,, ,, 7.1.37 to 26.3.37 | 31.3.37 |
| 218 *† *Harmonides* | F. R. Elwell | D. T. Griffiths, J. Kirkwood, V. Green. | J. E. Ellis | S. | Houston Line, Ld. | ,, ,, 6.11.36 to 5.1.37 | 9.2.37 |
| 262 *† *Hauraki*, M.V | A. Reed | D. E. Grantham, E. A. Buckingham, J. H. Ibbotson. | D. S. Bell | M.L. | Union S.S. Co., of N.Z., Ld. | Fm. 915 2.12.36 to 1.4.37 | 10.6.37 |
| 171 *† *Hertford* | J. Tuckett | H. Cockerrill, S. Thomas, M. Norril. | P. Moroney | S. | Federal S.N. Co., Ld. | Fms. 911 & 138 28.1.37 to 10.3.37 | 21.3.37 |
| *† *Hibernia* | J. R. Bulmer, M.B.E. | W. E. Meade | D. T. Rockey | ,, | L.M. & S. Railway | ,, ,, 30.1.37 to 17.5.37 | 27.5.37 |
| 182 †† *Highland Brigade*, M.V. | R. G. Clayton, D.S.C., R.D., Capt., R.N.R. | F. J. Swallow, N. Seaton, F. Frazer. | A. Reynolds | M.-S. | Royal Mail Lines, Ld. | ,, ,, 15.3.37 to 2.5.37 | 7.5.37 |

# FLEET LIST

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37. | | Date Last Return Received. |
|---|---|---|---|---|---|---|---|---|
| 116 †† *Highland Chieftain*, M.V. | J. A. Hodges, R.D., Commr., R.N.R. | W. B. Avison, W. R. Moore. | T. Desboro ... | M.-S. | Royal Mail Lines, Ld. | Fms. 911 & 138 | 17.2.37 to 4.4.37 | 8.5.37 |
| 099 †† *Highland Monarch*, M.V. | S. Weller ... ... | J. Thomas, W. B. Ovison, P. M. Bennock. | E. F. Weatherhead. | ,, | ,, ,, ,, | ,, ,, | 2.2.37 to 30.5.37 | 5.6.37 |
| 230 †† *Highland Patriot*, M.V. | R. H. Robinson ... | G. E. Leach, W. B. Tennant, W. D. Orde. | M. J. Carpenter | ,, | ,, ,, ,, | ,, ,, | 20.1.37 to 15.5.37 | 7.6.37 |
| 250 †† *Highland Princess* M.V. | A. E. Cornich ... ... | H. V. Todd, H. Davies, H. Bowker. | C. P. Thayne ... | ,, | ,, ,, ,, | ,, ,, | 1.3.37 to 18.4.37 | 24.4.37 |
| 261 *† *Huntingdon* ... | A. E. Taylor, R.D., Commr., R.N.R. ... | R. I. West, C. Cremin, G. Willis. | L. Gibson ... | S. | Federal S.N. Co., Ld. | ,, ,, | 6.3.37 to 14.4.37 | 21.4.37 |
| *† *Imperial Star* M.V. | D. R. Macfarlane ... | D. G. Wenbourne, G. W. D. Davies, L. Laurenson. | C. North ... | M. | Blue Star Line, Ld. | Fm. 911 | 20.10.36 to 20.1.37 | 9.2.37 |
| 260 *† *Inanda* ... ... | W. H. Gibbings ... | P. B. Jones, E. P. Simmons, B. H. Band. | E. J. Cook ... | ,, | T. & J. Harrison | Fms. 911 & 138 | 7.3.37 to 14.4.37 | 17.4.37 |
| 197 *† *Ingoma.* ... | J. T. Ling ... ... | F. G. La Hive, J. L. Curle, J. C. Cowen. | R. Hammond ... | ,, | ,, ,, | ,, ,, | 7.2.37 to 8.5.37 | 14.5.37 |
| *† *Inkosi* ... ... | J. T, Ling ... ... | F. G. La Hive ... ... | ... ... ... | S. | ,, ,, | ... ... ... | ... ... | ... |
| 144 *† *Inverbank*, M.V. | D. O'Donnell ... | L. C. Smith, D. Jackson. A. C. Loads. | H. Armstrong ... | ,, | A. Weir & Co. ... | ,, ,, | 22.10.36 to 12.4.37 | 23.4.37 |
| *† *Isle of Guernsey* | F. W. Hodges, R.D., Commr., R.N.R. | A. Light, W. F. Mason ... | T. J. Barron ... | ,, | Southern Rly. ... | ,, ,, | 3.3.37 to 12.4.37 | 13.4.37 |
| *† *Isle of Jersey* ... | M. C. Whiting ... ... | H. J. Pellow ... ... ... | T. Stubbs ... | ,, | ,, ,, ... | ,, ,, | 10.2.37 to 9.3.37 | 12.3.37 |
| *† *Isle of Sark* ... | H. M. Golding ... ... | H. J. Pellow ... ... ... | T. Stubbs ... | ,, | ,, ,, ... | ,, ,, | 15.3.37 to 7.5.37 | 8.5.37 |
| *† *Ixion* ... ... | W. A. Turner ... | J. Gould, W. I. Symes, G. A. C. Barnard. | ... ... ... | M.L. | A. Holt & Co. ... | Fm. 915 | 11.12.36 to 3.3.37 | 13.4.37 |
| 226 *† *Javanese Prince*, M.V. | C. S. Smith ... ... | H. Patterson, W. O. Young, J. T. Gray. | J. A. Campbell | ,, | Furness Lines ... | ,, | 22.8.36 to 29.12.36 | 26.2.37 |
| 188 †† *Kaisar-i-Hind* ... | L. F. Edwards ... | G. A. Wild, E. R. Rose ... | J. D. Downie ... | M.-S. | P. & O. S.N. Co. | Fm.s 911 & 138 | 29.11.36 to 20.5.37 | 24.5.37 |
| 206 *† *Karamea*, M.V.... | E. T. Grayston ... | L' B. Miller, N. S. Milne, J. H. Stroud. | W. S. Davies ... | S. | Shaw Savill & Albion Co., Ld. | ,, ,, | 14.2.37 to 2.6.37 | 5.6.37 |
| 093 *† *Kelso* ... ... | P. Pickering ... ... | F. E. Lovern, J. B. Dunkley | J. Greany ... | ,, | Ellerman Wilson Line Ld. | ,, ,, | 27.3.37 to 4.5.37 | 10.5.37 |
| *† *Kemmendine* ... | W. C. C. Plage ... | E. J. D. Turner, J. McLachlan, G. McCallom. | W. C. Clarke ... | M. | P. Henderson & Co., Ld. | ,, ,, | 17.3.37 to 15.5.37 | 20.5.37 |
| *† *Kent* ... ... | J. V. Williams ... | J. W. Coen, A. Weatherall, E. Hutchinson. | A. S. Crocker ... | S. | Federal S.N. Co., Ld. | ,, ,, | 16.2.37 to 30.3.37 | 14.4.37 |
| *† *Kyno* ... ... | A. H. Best ... ... | ... ... ... ... ... | ... ... ... | ,, | Ellerman Wilson Line, Ltd. | ... ... ... | ... ... | ... |
| 147 †† *Laconia* ... | P. R. Vaughan. D.S.C., R.D., Commr. R.N.R. | C. D. Smith, G. T. Kavanagh, G. H. Morris. | R. M. Shore ... | ,, | Cunard White Star, Ld. | Fms. 911 & 138<br>Fm. 912 | 29.3.37 to 16.5.37<br>29.3.37 to 16.5.37 | 22.5.37<br>22.5.37 |
| 062 †† *Lancastria* ... | J. G. P. Bisset, R.D., Commr., R.N.R. .. | J. T. Jones, J. Ashcroft, A. B. Hastings. | S. J. Ashgold ... | ,, | ,, ,, ,, | Fm. 911 & 138<br>Fm. 912 | 18.4.37 to 7.5.37<br>18.4.37 to 7.5.37 | 11.5.37<br>11.5.37 |
| 112 *† *La Rosarina* ... | S. Mathews ... ... | J. C. Murray, T. C. Townsend, G. Hurst. | J. Hunt ... | ,, | Furness Lines ... | Fms. 911 & 138 | 20.1.37 to 3.6.37 | 7.6.37 |
| 267 *† *Lassell*, M.V. ... | W. W. Watson ... | D. R. Matheson, T. J. Sweeney, B. Green. | T. Allen ... | ,, | Lamport & Holt Line, Ld. | ,, ,, | 27.11.36 to 23.2.37 | 1.3.37 |
| 083 *† *Lautaro*, M.V. ... | H. B. Reece, R.D., Capt., R.N.R. | B. Skellorn, A. Turner. K. Barkley. | P. O'Sullivan ... | M. | Pacific S.N. Co.... | ,, ,, | 4.12.36 to 23.3.37 | 15.4.37 |
| 251 *† *Levernbank*, M.V. | H. A. Jones ... ... | A. J. Falwasser, T. J. Howell | H. S. Matheson | S. | A. Weir & Co. ... | ,, ,, | 18.2.37 to 22.5.37 | 3.6.37 |
| 093 *† *Llandaff Castle*... | J. C. Brown, R.D., Capt. R.N.R. | J. A. Saunders ... ... | S. Kilminster ... | ,, | Union-Castle Mail S.S. Co., Ld. | ,, ,, | 19.3.37 to 28.5.37 | 2.6.37 |
| 094 *† *Llandovery Castle* | C. E. H. Aylen, R.D., Commr., R.N.R. | J. G. P. Lewis ... ... | A. E. Hunter ... | ,, | ,, ,, ... | ,, ,, | 30.11.36 to 31.1.37 | 9.2.37 |
| 097 †† *Llangibby Castle*, M.V. | R. W. Goodacre, R.D., Commr., R.N.R. | T. Conolly ... ... ... | A. Sutton ... | ,, | ,, ,, ... | ,, ,, | 23.1.37 to 26.3.37 | 30.3.37 |
| 216 *† *Llanstephan Castle* | B. Ray ... ... ... | D. W. Sowden ... ... | R. Brew ... | ,, | ,, ,, ... | ,, ,, | 5.3.37 to 7.5.37 | 13.6.37 |
| 137 *† *Logician* ... | E. B. Curphey ... | W. C. Johnston, W. S. Eustance, G. H. Howard. | N. A. Morton ... | ,, | T. & J. Harrison | ,, ,, | 15.12.36 to 2.3.37 | 8.3.37 |
| *† *Loriga* ... ... | A. C. Taylor ... ... | J. Williams ... ... ... | ... ... ... | M. | Pacific S.N. Co. Ld. | Fm. 911 | 1.4.37 to 19.4.37 | 4.5.37 |
| 008 *† *Losada*, M.V. ... | M. Armstrong, D.S.O.... | R. J. G. Goodwin ... ... | D. A. Craine ... | ,, | ,, ,, ,, ,, | Fms. 911 & 138 | 2.2.37 to 5.6.37 | 9.6.37 |
| 232 *† *Madura*... ... | J. A. Wright ... ... | D. A. Jones, G. Suter, R. A. Bidmead. | H. O. Francis ... | ,, | British India S.N. Co., Ld. | ,, ,, | 15.3.37 to 2.4.37 | 3.5.37 |
| *† *Mahia* ... ... | W. T. Thompson ... | W. G. Bolton, R. A. Costa ... | D. Irwin ... | S. | Shaw, Savill & Albion Co., Ld. | Fm. 911 | 17.10.36 to 16.2.37 | 19.2.37 |
| 140 *† *Mahratta* ... | W. Hill ... ... ... | W. Nuttall, A. G. Gorham ... | J. Turner ... | M. | T. & J. Brocklebank, Ld. | Fms. 911 & 138 | 31.1.37 to 15.2.37 | 18.2.37 |
| 014 *† *Mahronda* ... | L. T. Owen ... ... | J. B. Leigh, J. B. Newman, W. F. Harris. | W. Ritch ... | ,, | ,, ... | ,, ,, | 15.2.37 to 29.4.37 | 24.5.37 |
| 015 *† *Mahsud* ... | H. D. Fulcher... ... | P. D. McKenzie, H. Simpson, H. Fosbrooke. | R. Burton ... | ,, | ,, ... | ,, ,, | 28.1.37 to 2.4.37 | 9.4.37 |
| 018 *† *Makalla* ... | J. Greenall ... ... | G. E. Jones, H. Gillespie, D. O'Connor. | W. Fallowfield | ,, | ,, ... | ,, ,, | 21.2.37 to 3.5.37 | 6.5.37 |
| 236 *† *Malayan Prince*, M.V. | W. Irvine ... ... | A. A. Spilman. J. A. Taylor, J. A. Reeves | W. B. Ward ... | M.L. | Furness Lines ... | Fm. 915 | 13.11.36 to 15.3.37 | 1.6.37 |
| 195 †† *Maloja* ... ... | J. B. Browning, R.D., Commr., R.N.R. | J. C. Lapage, R. G. Wood, L. J. Cook. | A. Macbeth ... | M.-S. | P. & O. S.N. Co. | Fms. 911 & 138 | 10.1.37 to 15.4.37 | 17.4.37 |
| 009 *† *Manchester Brigade* | N. W. Prickersgill ... | J. Barclay ... ... ... | ... ... ... | S. | Manchester Liners Ltd. | Fm. 911 | 18.4.37 to 16.5.37 | 26.5.37 |
| 060 *† *Manchester Citizen* | F. D. Struss ... ... | ... ... ... ... | ... ... ... | ,, | ,, ,, | ... ... ... | ... ... | ... |
| 280 *† *Manchester Division* | G. M. Mitchell ... ... | W. E. Todd, L. A. Muir, A. Starmer. | J. J. Hand ... | ,, | ,, ,, | Fm. 911 | 25.4.37 to 22.5.37 | 1.6.37 |
| 179 *† *Manchester Port* | P. Linton ... ... | W. Hine, F. L. Osborne, J. C. Briggs. | W. Garnham ... | ,, | ,, ,, | Fms. 911 & 138<br>Fm. 912 | 19.1.37 to 7.5.37<br>19.1.37 to 7.5.37 | 18.5.37<br>18.5.37 |
| 281 *† *Manchester Producer.* | J. Makin ... ... | W. H. Moore, W. H. Downing, R. O. Venn. | E. E. McCarthy | ,, | ,, , | Fms. 911 & 138 | 2.3.37 to 11.4.37 | 24.4.37 |
| *† *Manchester Regiment* | C. H. Stott ... ... | ... ... ... ... | ... ... ... | ,, | ,, ,, | Fm. 911 | 9.5.37 to 4.6.37 | 8.6.37 |
| 146 *† *Mandasor* ... | G. Shaw ... ... | G. McL. Reid, S. Broughton, A. E. Evans. | G. T. Spears ... | M. | T. & J. Brocklebank, Ld. | Fms. 911 & 138 | 8.2.37 to 10.4.37 | 23.4.37 |
| *† *Maron*, M.V. ... | E. Marriott ... ... | A. C. Gravelle, A. F. Fry, M. J. Case . | ... ... ... | M.L. | A. Holt & Co. ... | Fm. 915 | 7.11.36 to 23.2.37 | 4.4.37 |
| 213 †† *Mashobra* ... | J. L. Beatty ... ... | L. Osborne, N. Lucas, N. Pirie. | D. R. Crombie... | M.-S. | British India S.N. Co., Ld. | Fms. 911 & 138 | 20.2.37 to 28.4.37 | 25.5.37 |
| 235 †† *Mataroa* ... | A. McIntosh ... ... | E. B. Macfarren, J. Wildsmith, G. C. Greenham | J. Harvey ... | S. | Shaw, Savill & Albion Co., Ld. | ,, ,, | 21.2.37 to 1.6.37 | 7.6.37 |

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37 | Date Last Return Received |
|---|---|---|---|---|---|---|---|
| 023 *† *Matheran* | W. T. King | A. L. Austin, R. Penston, W. Spencer. | J. D. Jones | M. | T. & J. Brocklebank, Ld. | Fms. 911 & 138 22.3.37 to 31.5.37 | 4.6.37 |
| 024 *† *Matra* | N. P. Cornish | E. L. Jones, E. Watson, C. W. C. Parry. | E. R. Capps | ,, | ,, ,, | ,, ,, 17.12.36 to 10.3.37 | 15.4.37 |
| 278 *† *Middlesex* | H. T. Wilde | A. Brown, J. Burrow, R. A. Belfield. | S. Jones | S. | Federal S.N. Co., Ld. | ,, ,, 17.8.36 to 4.1.37 | 9.1.37 |
| 194 †† *Moldavia* | R. R. Burge | H. R. Prowse, W. T. Banks, F. Collinson. | J. S. Skinner | M.-S. | P. & O. S.N. Co. | ,, ,, 26.1.37 to 7.5.37 | 27.5.37 |
| 199 †† *Mongolia* | H. R. Rhodes | E. J. Spurling, E. Cowen, G. MacLean. | A. Morris | ,, | ,, ,, ,, | ,, ,, 28.11.36 to 4.3.37 | 18.3.37 |
| 070 †† *Montcalm* | H. J. Ferguson | N. Duck, A. Miller, W. J. P. Roberts. | J. Biggins | S. | Canadian Pacific Steamships, Ld. | ,, ,, 21.2.37 to 1.6.37<br>Fm. 912 21.2.37 to 1.6.37 | 4.6.37<br>4.6.37 |
| 149 †† *Montclare* | W. S. Brown | D. Ewing, G. Mowatt, J. Rocne. | H. A. Bowman | M.-S. | ,, ,, | Fms. 911 & 138 7.3.37 to 24.5.37<br>Fm. 912 7.3.37 to 24.5.37 | 27.5.37<br>27.5.37 |
| 150 †† *Montrose* | C. Richardson | N. Duck, C. Belton, N. Scallow. | A. G. Hill | S. | ,, ,, | Fms. 911 & 138 16.11.36 to 1.1.37 | 4.1.37 |
| 164 †† *Mooltan* | F. E. French, R.D., Capt., R.N.R. | J. D. Strike, R. B. Webster, W. H. C. Wood-Roe. | H. Williamson | M.-S. | P. & O. S.N. Co. | ,, ,, 13.12.36 to 17.3.37 | 30.3.37 |
| 196 †† *Mulbera* | W. A. Grant-Pyves | J. L. Richardson, N. K. Boyd | B. Mahony | ,, | British India S.N. Co., Ld. | ,, ,, 24.2.37 to 30.3.37 | 6.4.37 |
| 078 *† *Myrtlebank*, M.V. | C. S. Holbrook | G. E. Linfield, T. H. Welton, S. Dowdeswell. | A. W. Mosley | S. | A. Weir & Co. | ,, ,, 25.1.37 to 18.4.37 | 10.5.37 |
| 201 †† *Naldera* | E. F. Hannan, R.D., Commr., R.N.R. | M. H. D'Aeth, F. W. J. Pearce, E. R. Physick. | R. T. Soans | M.-S. | P. & O. S.N. Co. | ,, ,, 20.1.37 to 7.4.37 | 27.4.37 |
| *† *Nankin* | T. H. Scott White | G. Reed, D. Clark, B. Don. | ... ... ... | M.L. | Eastern and Australasian S.S. Co., Ld. | Fm. 915 14.11.36 to 8.2.37 | 3.5.37 |
| 227 *† *Nardana* | C. Dorkin-White | T. Braidwood, H. Goater, D. W. Austin. | S. V. Knight | M. | British India S.N. Co., Ld. | Fms. 911 & 138 3.11.36 to 22.2.37 | 16.3.37 |
| 202 †† *Narkunda* | J. K. Chaplin, R.D., Capt., R.N.R.<br>W. D. C. Smith | W. W. Gow, W. N. Eade, W. R. Stockdale. | C. W. Herbert | M.-S. | P. & O. S.N. Co. | ,, ,, 15.11.36 to 17.2.37 | 22.2 37 |
| †† *Nascopie* | T. F. Smellie | A. H. Dobson | ... ... ... | S. | Hudson's Bay Co. | Fm. 911 14.7.36 to 1.10.36 | 22.10.36 |
| 257 *† *Natia* | E. A. Bridges | R. Hart, T. A. Buckney, W. Thomas. | D. Chalmers | M. | Royal Mail Lines, Ld. | Fms. 911 & 138 24.3.37 to 21.5.37 | 25.5.37 |
| *† *Nellore* | H. C. Stratford | K. Dawson, A. G. Rose, H. T., Rozea. | ... ... ... | M.L. | Eastern and Australasian S.S. Co., Ld. | Fm. 915 12.12.36 to 8.3.37 | 3.5.37 |
| 162 *† *Nestor* | J. J. Power | J. H. Higson, H. Graham, I. Skurray. | C. Townsend | S. | A. Holt & Co. | Fms. 911 & 138 1.2.37 to 27.5.37 | 3.6.37 |
| 136 *† *Newfoundland* | T. H. Webber | J. L. Macklin, C. H. Kenyon. | W. C. Brock | ,, | Furness Lines | ,, ,, 27.1.37 to 23.4.37<br>Fm. 912 27.1.37 to 23.4.37 | 26.4.37<br>26.4.37 |
| *† *New Zealand Star*, M.V. | J. B. Hall | R. H. Soloman, J. J. Dickson, D. Greenhorn. | J. A. Bradley | M. | Blue Star Line, Ld. | Fm. 911 5.2.37 to 21.5.37 | 28.5.37 |
| 210 *† *Niagara* | W. Martin | A. H. S. Gell, A. J. McKenzie, F. S. Bowman. | G. M. Power | M.L. | Canadian-Australasian Line, Ld. | Fm. 915 5.11.36 to 13.3.37 | 19.5.37 |
| *† *Northern Coast* | H. Cameron | F. H. Thomson, W. Evans. | ... ... ... | ,, | Coast Lines, Ld. | ,, 29.8.36 to 25.1.37 | 10.3.37 |
| 181 *† *Nova Scotia* | J.W. Murphy | M. Forsythe, R. Handley, E. E. Sainty, C. Robinson. | H. G. Warren<br>G. Penketh | S. | Furness Lines | Fms. 911 & 138 20.2.37 to 7.5.37<br>Fm. 912 20.2.37 to 7.5.37 | 11.5.37<br>11.5.37 |
| 243 *† *Opawa*, M.V. | H. G. B. Field | S. Jarvis, J. McCulloch, J. Montcrief. | P. Fleming | M. | New Zealand Shipping Co., Ld. | Fms. 911 & 138 1.9.36 to 14.12.36 | 3.2.37 |
| 172 †† *Orama* | E. P. Cameron, R.D., Capt., R.N.R. | D. Williams, H. R. Treseder H. Barker. | F. W. Helman | S. | Orient S.N. Co., Ld. | ,, ,, 4.2.37 to 2.5.37 | 7.5.37 |
| 080 *† *Orari*, M.V. | J. G. Almond | C. J. Cordran, H. R. Smith, J. Cree. | W. E. Fordham | M. | New Zealand Shipping Co., Ld. | ,, ,, 23.12.36 to 25.1.37 | 2.4.37 |
| 246 †† *Orbita* | J. H. Kirkwood | D. Jones, D. W. Hutchison, F. Williams. | D. H. Sinclair | M.-S. | Pacific S.N. Co. | ,, ,, 16.3.37 to 22.5.37 | 29.5.37 |
| 087 †† *Orduna* | E. H. Large, R.D., Commr., R.N.R. | R. D. Eckford, E. C. Hicks, J. Lumpner. | W. G. Sutherland | ,, | ,, ,, | ,, ,, 3.1.37 to 13.5.37 | 7.6.37 |
| 148 †† *Orford* | A. E. Nicholls | J. N. Hulse, G. R. Grandage, R. J. Craddock. | J. Macdonald | ,, | Orient S.N. Co., Ld. | ,, ,, 1.3.37 to 1.6.37 | 4.6.37 |
| 019 †† *Orion* | A. L. Owens, R.D., A.D.C., R.N.R. | P. Sargent, E. M. Mackay, G. M. Croghan. | A. F. Edwards | ,, | ,, ,, ,, | ,, ,, 14.1.37 to 7.5.37 | 7.6.37 |
| 174 †† *Ormonde* | G. G. Thorne, R.D., Capt., R.N.R. | C. Edgcombe, L. Sly, A. E. Coles. | A. Seaton | S. | ,, ,, ,, | ,, ,, 7.12.36 to 10.3.37 | 16.3.37 |
| 055 †† *Oronsay* | C. G. Matheson, D.S.O., R.D., Commodore, R.N.R. | C. Pinckney, J. H. Smythe, W. Storey. | P. T. Darby | ,, | ,, ,, ,, | ,, ,, 20.12.36 to 23.3.37 | 30.3.37 |
| 085 †† *Orontes* | G. G. Thorne | R. W. Roberts, D. Williams, W. A. Cooke. | N. A. Boon | M.-S. | ,, ,, ,, | ,, ,, 18.1.37 to 6.6.37 | 9.6.37 |
| *† *Oropesa* | R. E. Dunn, O.B.E. | G. Gerrety | ... ... ... | M. | ,, ,, ,, | Fm. 911 23.2.37 to 30.4.37 | 8.5.37 |
| 156 †† *Otranto* | L. V. James, D.S.C. | S. Ayles, J. C. Stratford, F. R. F. Wilson. | J. L. Curry | M.-S. | ,, ,, ,, | Fms. 911 & 138 15.2.37 to 16.5.37 | 26.5.37 |
| *† *Oxfordshire* | P. G. Cooper | A. Thompson, E. B. Rhead, R. S. Mortimer. | ... ... ... | S. | Bibby Bros. & Co. | Fm. 911 19.1.37 to 25.3.37 | 31.3.37 |
| 144 *† *Pacific Exporter*, M.V. | C. E. Holland, R.D., Commr., R.N.R. | E. Jones, S. Lavis, S. J. Hardy. | W. J. Moore | ,, | Furness Lines | Fms. 911 & 138 10.2.37 to 12.5.37 | 19.5.37 |
| *† *Paris* | C. G. G. Munton | E. W. Smith | W. Kelley | ,, | Southern Rly. | ,, ,, 2.3.37 to 30.5.37 | 2.6.37 |
| *† *Penola*, Schooner | R. E. D. Ryder, Lieut., R.N. | Q. Riley, D. Roberts, I. F. Meiklejohn. | ... ... ... | M.L. | British Graham Land Expedition. | Fm. 915 13.9.34 to 21.1.35 | 21.5.36 |
| 040 *† *Port Adelaide* | R. Williams | F. R. Gorman, E. G. Jones, R. Aylward. | J. L. Stewart | S. | Commonwealth & Dominion Line, Ld. | Fms. 911 & 138 9.9.36 to 18.2.37 | 1.3.37 |
| 238 *† *Port Alma*, M.V. | S. C. Cottell | G. Puttick, T. L. Kidwell, F. W. Elgar. | L. D. Corbett | ,, | ,, ,, ,, | ,, ,, 16.2.36 to 22.5.36 | 8.6.36 |
| 128 *† *Port Auckland* | C. A. Robinson | E. C. Read, F. Taylor, J. G. Thorn. | H. Workman | ,, | ,, ,, ,, | ,, ,, 21.1.37 to 24.5.37<br>Fm. 912 21.1.37 to 24.5.37 | 2.6.37<br>2.6.37 |
| 268 *† *Port Bowen* | E. O. Thomas | R. E. Garner, E. W. Young, D. N. Harries. | A. Naylor | ,, | ,, ,, ,, | Fms. 911 & 138 16.10.36 to 16.3.37 | 23.3.37 |
| 190 *† *Port Chalmers*, M.V. | J. E. Compton | W. B. Hopkins, P. H. Pendrick, A. Alexander. | T. Bagnall | ,, | ,, ,, ,, | ,, ,, 28.5.36 to 30.9.36 | 8.10.36 |
| 131 *† *Port Darwin* | T. H. Rigden | T. B. Milburn, V. G. Battle, R. J. W. Baxter. | J. D. Lovelock | ,, | ,, ,, ,, | ,, ,, 25.10.36 to 15.5.37 | 19.5.37 |

| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37. | Date Last Return Received |
|---|---|---|---|---|---|---|---|
| 095 *† *Port Dunedin*, M.V. | G. W. Hearn | A. Brown, W. B. Craig, P. R. Bradnee. | W. J. B. Craig | S. | Commonwealth & DominionLine,Ld. | Fms. 911 & 138 20.5.36 to 29.8.36 | 9.9.36 |
| 010 *† *Port Fremantle*, M.V. | R. S. Durham, D.S.O. | R. Bettess, G. W. Horton, P. Becham. | ... ... ... | ,, | ,, ,, ,, | ,, ,, 24.12.36 to 15.4.37<br>Fm. 912 24.12.36 to 15.4.37 | 24.4.37<br>24.4.37 |
| 163 *† *Port Gisborne*, M.V. | W. G. Higgs | N. J. Dedman, H. Clinch, R. Scott. | E. Mooney | ,, | ,, ,, ,, | Fms. 911 & 138 10.2.37 to 14.5.37 | 19.5.37 |
| *† *Port Jackson*, M.V. | S. W. Hayter | L. W. Cady | ... ... ... | ,, | ,, ,, ,, | Fm. 911 2.2.37 to 18.5.37 | 25.5.37 |
| 111 *† *Port Townsville*, M.V. | S. C. Cottell | K. D. Morgan, R. N. Rogerson, F. R. Croster. | M. Coxhead | ,, | ,, ,, ,, | Fms. 911 & 138 22.11.36 to 12.3.37 | 18.3.37 |
| 177 *† *Port Wellington* | R. Needham | G. F. Pannett, W. D. Henderson, R. A. Wight. | R. D. Waterhouse | ,, | ,, ,, ,, | ,, ,, 29.10.36 to 10.4.37 | 24.4.37 |
| 003 *† *Port Wyndham*, M.V. | W. Gilling | J. G. Thom, G. B. Lovegrove, R. C. Webb. | W. Jones | ,, | ,, ,, ,, | ,, ,, 22.9.36 to 30.12.36 | 6.1.37 |
| *† *Prague* | F. E. Beeching, D.S.C. | R. Wright, F. Woods | A. Potter | ,, | L. & N.E. Rly. | ,, ,, 12.3.37 to 30.5.37 | 4.6.37 |
| 063 *† *Queen City* | R. V. Arkwright | J. C. H. Thornhill | ... ... ... | ,, | Sir Wm. Reardon Smith & Partners, Ld. | Fm. 911 8.1.36 to 6.1.37 | 22.2.37 |
| 183 †† *Queen Mary* | R. V. Peel, R.D., Commodore, R.N.R. | A. C. I'Anson, H. V. Clarke, E. J. R. Pollitt. | A. H. Farman | ,, | Cunard White Star, Ld. | Fms. 911 & 138 4.3.37 to 20.5.37<br>Fm. 912 4.3.37 to 20.5.37 | 30.5.37<br>30.5.37 |
| 165 *† *Radnorshire*,M.V. | D. E. Evans | H. D. Hayes, J. A. A. Evans, H. Andrews. | I. T. Davies | ,, | A. Holt & Co. | Fms. 911 & 138 25.2.37 to 4.6.37 | 8.6.37 |
| 205 †† *Rajputana* | W. A. Cotching | I. M. Sinclair, R. W. Richardson, R. B. Nowell. | W. Banbury | M.-S. | P. & O. S.N. Co. | ,, ,, 26.2.37 to 2.6.37 | 8.6.37 |
| 228 †† *Ranchi* | J. A. Smith | J. H. Shears, J. MacArthur, R. S. Kerridge. | W. Stevenson | ,, | ,, ,, ,, | ,, ,, 31.1.37 to 5.5.37 | 10.5.37 |
| 224 †† *Rangitane*, M.V. | A. W. McKellar, R.D., Capt., R.N.R. | M. L. Warren, S. R. Leggett, K. Barnett. | W. E. Smith | ,, | New Zealand Shipping Co., Ld. | ,, ,, 14.11.36 to 14.2.37 | 22.2.37 |
| 217 †† *Rangitata*, M.V. | E. Holland | P. M. Church, R. A. Belfield, F. Jones. | H. R. Dedman | ,, | ,, ,, ,, | ,, ,, 6.2.37 to 8.5.37 | 24.5.37 |
| 105 †† *Rangitiki*, M.V. | H. Barnett | H. Baddeley, J. Ormsby | L. Horn | ,, | ,, ,, ,, | ,, ,, 9.1.37 to 17.4.37 | 22.4.37 |
| 207 †† *Ranpura* | J. M. Legg | P. C. Chorley, C. H. Stokes, G. Randall. | J. R. C. Johnson | ,, | P. & O. S.N. Co. | ,, ,, 22.11.36 to 24.2.37 | 31.3.37 |
| 071 †† *Rawalpindi* | M. G. Draper | L. A. Hill, M. G. Morris, A. P. Godfrey. | S. W. Sharp | ,, | ,, ,, ,, | ,, ,, 6.12.36 to 17.4.37 | 15.5.37 |
| 247 *† *Recorder* | J. J. Egerton | G. McGuinness, L. Harriman, D. Wolstenholme. | W. Matthews | M. | T. & J. Harrison | ,, ,, 4.1.37 to 15.3.37 | 18.3.37 |
| 132 *† *Reina del Pacifico*, M.V. | A. Ridyard, O.B.E. | S. E. Ayland, J. K. Campbell, H. Matthews. | J. B. Stone | ,, | Pacific S.N. Co. | ,, ,, 16.1.37 to 31.5.37 | 3.6.37 |
| 276 †† *Remuera* | F. W. Robinson | R. S. Warren, J. D. Bennett, D. S. R. Martin. | E. Lawrence | S. | New Zealand Shipping Co., Ld. | ,, ,, 13.12.36 to 25.3.37 | 6.4.37 |
| *† *Rhexenor* | R. C. Neville<br>J. P. Williams | W. Ross, P. Dusine, T. Arch | C. G. Brawny | M.L. | A. Holt & Co. | Fm. 915 21.10.36 to 12.2.37 | 23.3.37 |
| *† *Rotorua* | C. B. Lamb | R. H. Carter, L. W. Fulcher. | ... ... ... | M. | New Zealand Shipping Co., Ld. | ,, 1.3.36 to 28.6.36 | 15.8.36 |
| *† *Ruahine* | G. Kinnell | J. E. Clarke | ... ... ... | S. | ,, ,, ,, | Fm. 911 11.10.36 to 5.2.37 | 24.2.37 |
| *† *St. Helier* | R. Pitman | T. E. Martin | E. Trapnell | ,, | G.W. Railway | Fms. 911 & 138 3.11.36 to 30.1.37 | 3.2.37 |
| *† *St. Julien* | L. Richardson | V. Newton | E. Trapnell | ,, | ,, ,, | ,, ,, 27.2.37 to 29.4.37 | 3.5.37 |
| *† *St Patrick* | R. Pitman | T. D. Thomas | L. M. Wilmott | ,, | ,, ,, | ,, ,, 25.5.37 to 27.5.37 | 3.6.37 |
| 100 †† *Samaria* | J. McRostie | W. J. Law, B. Harrison, J. C. Dawson . | R. A. J. Owlett | ,, | Cunard White Star, Ld. | Fms. 911 & 138 1.3.37 to 22.5.37<br>Fm. 912 1.3.37 to 22.5.37 | 25.5.37<br>25.5.37 |
| *† *San Adolfo*, M.V. | A. P. Wallace | D. Skinner | ... ... ... | M.-S. | Eagle Oil & Shipping Co., Ld. | Fm. 911 27.1.37 to 8.5.37 | 11.5.37 |
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| Name of Vessel. | Captain. | Observing Officers. | Senior Wireless Operator. | Meteorological Instrument Equipment. | Owners. | Logs, Registers, or Records Contributed. 8.3.37 to 10.6.37. | Date Last Return Received |
|---|---|---|---|---|---|---|---|
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| *† *Tinhow* | D. I. C. Robertson | W. P. Wheeler | ... | ,, | A. Weir & Co. | ,, 5.1.37 to 17.3.37 | 16.4.37 |
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| *Dakarian* | W. Baird | W. P. Baker | ,, ,, | 30 ,, ,, 26.4.37 |
| *Darian* | W. Rowberry | R. F. Hart | ,, ,, | 30 ,, ,, 19.5.37 |
| *Davision* | E. Holloway | J. W. Henderson | ,, ,, | 30 ,, ,, 7.4.37 |
| *Daytonian* | J. M. Crowley | S. Richardson | ,, ,, | 30 ,, ,, 14.5.37 |
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